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UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1120 O.G. 54 on Nov. 27, 1990.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17,1990.

The search fee of the European Patent Office was changed due to a difference in the amount of the fee in German Marks and the exchange rate of the U.S. dollar in relation to the German Mark as of Jan. 3, 1991, and was announced in the *Official Gazette* at 1122 O.G. 564 on Jan 1, 1991.

International fees were changed on March 1, 1991 due to a difference in the exchange rate of the U.S. dollar in relation to the Swiss Franc and were announced in the *Official Gazette* at 1122 O.G. 629 on Jan. 22, 1991.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1492.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	559.00
Basic Supplemental fee (for each page over 30)	11.00
Designation fee per country or region for the first 10 national or regional offices	135.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	171.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

Dec. 21, 1990

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on April 12, 1988 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,736,466 through 4,737,993
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 10, 1984 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,441,211 through 4,442,550
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), and (f), as amended Nov. 5, 1990, which are reproduced below:

37 CFR § 1.20 Post-issuance fees and surcharges

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant.....$245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant.....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)).....$415.00
By other than a small entity.....$850.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)).....$835.00
By other than a small enttity.....$1670.00"

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(k), (l) and (m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27,1982.....$120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)).....$60.00
By other than a small entity.....$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable.....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED FEBRUARY 3, 1991 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 31,827	06/555,295	02/05/85
(4,371,879)	(06/261,611)	(02/01/83)
4,370,786	06/235,443	02/01/83
4,370,790	06/218,218	02/01/83
4,370,811	06/233,010	02/01/83
4,370,821	06/256,654	02/01/83
3,370,861	06/333,224	02/01/83
4,370,864	06/218,838	02/01/83
4,370,878	06/232,733	02/01/83
4,370,880	06/269,877	02/01/83
4,370,910	06/221,413	02/01/83
4,370,911	06/343,232	20/01/83
4,370,912	06/244,113	02/01/83
4,370,926	06/229,997	02/01/83
4,370,930	06/220,478	02/01/83
4,370,934	06/224,026	02/01/83
4,370,944	06/228,682	02/01/83
4,370,950	06/325,196	02/01/83
4,370,962	06/246,618	02/01/83
4,370,965	06/257,467	02/01/83
4,371,016	06/242,618	02/01/83
4,371,022	06/266,716	02/01/83
4,371,037	06/216,452	02/01/83
4,371,040	06/296,369	02/01/83
4,371,045	06/249,783	02/01/83
4,371,072	06/218,775	02/01/83
4,371,080	06/236,420	02/01/83
4,371,089	06/299,387	02/01/83
4,371,100	06/229,953	02/01/83
4,371,107	06/324,082	02/01/83
4,371,112	06/233,573	02/01/83
4,371,116	06/222,549	02/01/83
4,371,123	06/239,006	02/01/83
4,371,135	06/228,576	02/01/83
4,371,144	06/252,956	02/01/83
4,371,145	06/307,464	02/01/83
4,371,160	06/240,478	02/01/83
4,371,174	06/219,833	02/01/83
4,371,196	06/248,471	02/01/83
4,371,202	06/218,647	02/01/83
4,371,215	06/221,569	02/01/83
4,371,220	06/224,845	02/01/83
4,371,224	06/219,695	02/01/83
4,371,246	06/234,595	02/01/83
4,371,268	06/219,910	02/01/83
4,371,270	06/266,611	02/01/83
4,371,273	06/225,688	02/01/83
4,371,275	06/263,100	02/01/83
4,371,295	06/245,454	02/01/83
4,371,309	06/237,929	02/01/83
4,371,312	06/248,829	02/01/83
4,371,316	06/246,652	02/01/83
4,371,317	06/232,687	02/01/83
4,371,341	06/253,359	02/01/83
4,371,344	06/260,043	02/01/83
4,371,353	06/256,508	02/01/83
4,371,372	06/278,210	02/01/83
4,371,375	06/322,179	02/01/83
4,371,386	06/265,260	02/01/83
4,371,395	06/280,717	02/01/83
4,371,410	06/280,195	02/01/83
4,371,421	06/254,871	02/01/83
4,371,424	06/276,073	02/01/83
4,371,426	06/293,065	02/01/83
4,371,437	06/243,435	02/01/83
4,371,444	06/261,853	02/01/83
4,371,456	06/255,221	02/01/83
4,371,457	06/218,312	02/01/83
4,371,462	06/341,216	02/01/83
4,371,469	06/258,482	02/01/83
4,371,490	06/235,603	02/01/83
4,371,492	06/302,698	02/01/83
4,371,499	06/258,974	02/01/83
4,371,523	06/220,779	02/01/83
4,371,549	06/268,945	02/01/83
4,371,555	06/313,834	02/01/83
4,371,557	06/226,671	02/01/83
4,371,560	06/318,388	02/01/83
4,371,567	06/251,770	02/01/83
4,371,568	06/263,771	02/01/83
4,371,569	06/306,753	02/01/83
4,371,572	02/235,753	02/01/83
4,371,573	06/322,547	02/01/83
4,371,577	06/372,139	02/01/83

Patent Number	Serial Number	Issue Date
4,371,598	06/280,593	02/01/83
4,371,617	06/244,857	02/01/83
4,371,623	06/233,031	02/01/83
4,371,631	06/289,142	02/01/83
4,371,634	06/321,709	02/01/83
4,371,638	06/294,521	02/01/83
4,371,649	06/283,943	02/01/83
4,371,654	06/273,504	02/01/83
4,371,658	06/239,835	02/01/83
4,371,665	06/334,454	02/01/83
4,371,668	06/242,031	02/01/83
4,371,683	06/356,292	02/01/83
4,371,686	06/302,119	02/01/83
4,371,714	06/221,237	02/01/83
4,371,715	06/305,535	02/01/83
4,371,722	06/277,815	02/01/83
4,371,725	06/326,646	02/01/83
4,371,773	06/249,376	02/01/83
4,371,775	06/251,058	02/01/83
4,371,776	06/277,729	02/01/83
4,371,804	06/288,910	02/01/83
4,371,823	06/219,966	02/01/83
4,371,857	06/261,312	02/01/83
4,371,877	06/256,349	02/01/83
4,371,880	06/293,490	02/01/83
4,371,881	06/269,568	02/01/83
4,371,900	06/227,612	02/01/83
4,371,908	06/345,356	02/01/83
4,371,913	06/217,721	02/01/83
4,371,914	06/217,722	02/01/83
4,371,915	06/217,723	02/01/83
4,371,944	06/225,508	02/01/83
4,371,972	06/227,833	02/01/83
4,639,946	06/783,612	02/03/87
4,639,948	06/734,926	02/03/87
4,639,955	06/760,031	02/03/87
4,639,959	06/762,684	02/03/87
4,639,961	06/645,346	02/03/87
4,639,964	06/731,446	02/03/87
4,639,965	06/734,330	02/03/87
4,639,973	06/720,672	02/03/87
4,639,975	06/738,232	02/03/87
4,639,977	06/834,163	02/03/87
4,639,989	06/721,442	02/03/87
4,640,006	06/745,099	02/03/87
4,640,012	06/737,781	02/03/87
4,640,013	06/529,854	02/03/87
4,640,016	06/810,913	02/03/87
4,640,018	06/822,399	02/03/87
4,640,026	06/668,104	02/03/87
4,640,027	06/790,108	02/03/87
4,640,030	06/618,565	02/03/87
4,640,031	06/551,371	02/03/87
4,640,034	06/733,998	02/03/87
4,640,035	06/409,025	02/03/87
4,640,038	06/776,540	02/03/87
4,640,043	06/744,752	02/03/87
4,640,044	06/755,856	02/03/87
4,640,045	06/704,964	02/03/87
4,640,052	06/832,842	02/03/87
4,640,054	06/692,966	02/03/87
4,640,063	06/765,140	02/03/87
4,640,070	06/842,572	02/03/87
4,640,072	06/793,697	02/03/87
4,640,073	06/825,792	02/03/87
4,640,075	06/818,204	02/03/87
4,640,076	06/763,524	02/03/87
4,640,078	06/706,560	02/03/87
4,640,091	06/817,056	02/03/87
4,640,094	06/825,848	02/03/87
4,640,103	06/765,627	02/03/87
4,640,107	06/807,967	02/03/87
4,640,109	06/618,671	02/03/87
4,640,114	06/696,230	02/03/87
4,640,130	06/665,800	02/03/87
4,640,136	06/680,378	02/03/87
4,640,137	06/739,676	02/03/87
4,640,140	06/684,864	02/03/87
4,640,142	06/493,934	02/03/87
4,640,144	06/764,795	02/03/87
4,640,146	06/488,495	02/03/87
4,640,154	06/530,733	02/03/87
4,640,164	06/729,599	02/03/87
4,640,176	06/662,345	02/03/87
4,640,177	06/665,139	02/03/87
4,640,189	06/818,995	02/03/87
4,640,191	06/765,272	02/03/87
4,640,194	06/676,661	02/03/87
4,640,203	06/802,246	02/03/87
4,640,215	06/824,639	02/03/87
4,640,223	06/853,690	02/03/87
4,640,226	06/790,507	02/03/87
4,640,231	06/738,472	02/03/87
4,640,232	06/655,575	02/03/87
4,640,242	06/642,871	02/03/87
4,640,259	06/720,238	02/03/87
4,640,260	06/821,046	02/03/87
4,640,263	06/720,031	02/03/87
4,640,268	06/709,512	02/03/87
4,640,269	06/635,834	02/03/87
4,640,272	06/540,402	02/03/87
4,640,277	06/611,507	02/03/87
4,640,278	06/642,422	02/03/87
4,640,279	06/763,549	02/03/87
4,640,282	06/706,547	02/03/87
4,640,284	06/757,380	02/03/87
4,640,297	06/694,091	02/03/87
4,640,300	06/682,772	02/03/87
4,640,307	06/555,690	02/03/87
4,640,310	06/686,206	02/03/87
4,640,313	06/563,065	02/03/87
4,640,315	06/803,716	02/03/87
4,640,318	06/810,879	02/03/87
4,640,326	06/694,603	02/03/87
4,640,334	06/804,667	02/03/87
4,640,339	06/819,297	02/03/87
4,640,343	06/649,669	02/03/87
4,640,346	06/843,713	02/03/87
4,640,348	06/792,278	02/03/87
4,640,359	06/797,354	02/03/87
4,640,365	06/726,802	02/03/87
4,640,371	06/744,607	02/03/87
4,640,372	06/801,294	02/03/87
4,640,377	06/628,586	02/03/87
4,640,382	06/644,982	02/03/87
4,640,383	06/825,224	02/03/87
4,640,384	06/849,120	02/03/87
4,640,385	06/747,557	02/03/87
4,640,388	06/698,904	02/03/87
4,640,401	06/730,006	02/03/87
4,640,417	06/721,225	02/03/87
4,640,418	06/720,997	02/03/87
4,640,420	06/543,750	02/03/87
4,640,424	06/840,523	02/03/87
4,640,425	06/599,425	02/03/87
4,640,426	06/826,921	02/03/87
4,640,430	06/809,866	02/03/87
4,640,444	06/632,083	02/03/87
4,640,447	06/665,758	02/03/87
4,640,450	06/735,891	02/03/87
4,640,455	06,846,835	02/03/87
4,640,456	06/788,390	02/03/87
4,640,464	06/699,145	02/03/87
4,640,466	06/718,570	02/03/87
4,640,467	06/755,519	02/03/87
4,640,469	06/766,425	02/03/87
4,640,472	06/808,062	02/03/87
4,640,476	06/738,368	02/03/87
4,640,482	06/653,901	02/03/87
4,640,483	06/704,790	02/03/87
4,640,486	06/744,934	02/03/87
4,640,487	06/723,740	02/03/87
4,640,490	06/840,687	02/03/87
4,640,493	06/747,978	02/03/87
4,640,495	06/694,354	02/03/87
4,640,508	06/679,257	02/03/87

Patent Number	Serial Number	Issue Date
4,640,509	06/731,917	02/03/87
4,640,510	06/615,311	02/03/87
4,640,511	06/676,114	02/03/87
4,640,515	06/827,735	02/03/87
4,640,516	06/829,933	02/03/87
4,640,518	06/672,480	02/03/87
4,640,519	06/581,224	02/03/87
4,640,520	06/698,483	02/03/87
4,640,528	06/760,595	02/03/87
4,640,537	06/817,459	02/03/87
4,640,539	06/789,320	02/03/87
4,640,543	06/680,551	02/03/87
4,640,590	06/747,359	02/03/87
4,640,594	06/649,983	02/03/87
4,640,597	06/700,157	02/03/87
4,640,598	06/798,389	02/03/87
4,640,608	06/250,929	02/03/87
4,640,614	06/679,570	02/03/87
4,640,623	06/795,345	02/03/87
4,640,626	06/757,445	02/03/87
4,640,632	06/369,756	02/03/87
4,640,637	06/612,081	02/03/87
4,640,642	06/693,666	02/03/87
4,640,651	06/685,612	02/03/87
4,640,659	06/684,106	02/03/87
4,640,662	06/740,735	02/03/87
4,640,674	06/815,488	02/03/87
4,640,678	06/780,666	02/03/87
4,640,679	06/661,041	02/03/87
4,640,680	06/735,993	02/03/87
4,640,681	06/771,156	02/03/87
4,640,683	06/588,590	02/03/87
4,640,684	06/780,023	02/03/87
4,640,692	06/759,386	02/03/87
4,460,694	06/668,370	02/03/87
4,640,701	06/720,784	02/03/87
4,640,705	06/511,513	02/03/87
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4,641,272	06/594,151	02/03/87
4,641,283	06/514,190	02/03/87
4,641,293	06/575,861	02/03/87
4,641,303	06/717,810	02/03/87
4,641,321	06/757,630	02/03/87
4,641,323	06/464,636	02/03/87
4,641,334	06/702,160	02/03/87
4,641,345	06/686,965	02/03/87
4,641,356	06/644,101	02/03/87
4,641,372	06/652,467	02/03/87
4,641,376	06/769,808	02/03/87
4,641,378	06/617,905	02/03/87

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in theindicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b).

4,715,620, Re. S. N. 07/662,730, Filed Mar. 1, 1991, Cl. 282/9, MANIFOLD FORM ASSEMBLY, Gary J. Thompson, Owner of Record: *Inventor,* Attorney or Agent: Andrew S. McConnel, Ex. Gp.: 326

4,761,058, Re. S. N. 07/562,108, Filed Aug. 2, 1990, Cl. 350/331T, BIASING LIQUID CRYSTAL DISPLAYS HAVING CAPACITORS AND TRANSISTORS, Yukitoshi Okubo, et al., Owner of Record: *Inventor,* Attorney or Agent: Steven E. Warner, Ex. Gp.: 254

4,761,148, Re. S. N. 07/559,689, Filed July 26, 1990, Cl. 439/621, FUSE BLOCK WITH REJECTION FEATURE, Gayle L. Sappingotn, Owner of Record: *Cooper Industries, Inc., Houston, Tex.,* Attorney or Agent: David A. Rose, Ex. Gp.: 322

4,802,444, Re. S. N. 07/638,812, Filed Jan. 8, 1991, Cl. 119/29, THERAPEUTIC PET TOY, Joseph P. Markham, et al., Owner of Record: *Bounce, Inc., Lakewood, Colo.*, Attorney or Agent: Gary D. Fields, Ex. Gp.: 333

4,809,422, Re. S. N. 07/665,423, Filed Mar. 6, 1991, Cl. 29/568, MACHINE TOOL WITH INDEX MEANS, Koichiro Kitamura, Owner of Record: *Kitamura Machinery Co., Ltd., Takaoka-Si, Japan*, Attorney or Agent: Jean D. Kuelper, Ex. Gp.: 322

4,913,998, Re. S. N. 07/664,535, Filed Mar. 4, 1991, Cl. 430/96, SILVER-BASED ELECTROSTATIC PRINTING MASTER, Allan Cairncross, et al., Owner of Record: *E. I. du Pont de Nemours and Company, Wilmington, De.*, Attorney or Agent: Alason G. Bowen, Ex. Gp.: 156

4,952,382, Re. S. N. 07/634,106, Filed Dec. 26, 1990, Cl. 423/244, PROCESS FOR REMOVING SULFUR OXIDES WITH AN ABSORBENT WHICH CONTAIN AN ANIONIC CLAY, Imanuel H. Vanbroekhoven, Owner of Record: *Akzo N.V., BM Arnhem, Netherlands*, Attorney or Agent: William P. Berridge, Ex. Gp.: 113

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,554,644, Reexam. No. 90/002,294, Requested Mar. 11, 1991, Cl. 365/154, STATIC RAM CELL, Peter C. Chen, et al., Owner of Record: *Fairchild Camera and Instrument Corp., (A. K. A. Fairchild Semiconductor Corp.,) Mountain View, Calif.*, Attorney or Agent: Micheal J. Pollock, Limbach, Limbach & Sutton, San Francisco, Calif., Ex. Gp.: 233, Requester: Owner

4,573,477, Reexam. No. 90/002,290, Requested Feb. 28, 1991, Cl. 128/663, ULTRASONIC DIAGNOSTIC APPARATUS, Koroku Namekawa, et al., Owner of Record: *Aloka Co., Ltd., Tokyo, Japan*, Attorney or Agent: William L. Androlia, Koda & Androlia, Los Angeles, Calif., Ex. Gp.: 335, Requester: Owner

4,641,668, Reexam. No. 90/002,291, Requested Feb. 28, 1991, Cl. 128/661, ULTRASONIC BLOOD FLOW IMAGING METHOD AND APPARATUS, Koroku Namekawa, Owner of Record: *Aloka Co., Tokyo, Japan*, Attorney or Agent: William L. Androlia, Koda & Androlia, Los Angeles, Calif., Ex. Gp.: 335, Requester: Owner

4,679,126, Reexam. No. 90/002,289, Requested Mar. 01, 1991, Cl. 362/226, MINIATURE LAMP ARRAYS HAVING IMPROVED LAMP RETENTION FEATURES, Robert H. Van Sickler, Owner of Record: *General Electric Corp., Cleveland, Ohio*, Attorney or Agent: John P. McMahon, Cleveland, Ohio, Ex. Gp.: 346, Requester: Owner

4,826,283, Reexam. No. 90/002,292, Requested Mar. 7, 1991, Cl. 350/096.12, LiB_3O_5 CRYSTAL AND ITS NONLINEAR OPTICAL DEVICES, Chen Chuangtian, et al., Owner of Record: *Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fujian, China*, Attorney or Agent: Armstrong, Nikado, Marmelstein & Kubovcik, Washington, D.C., Ex. Gp.: 251, Requester: Owner

4,836,218, Reexam. No. 90/002,286, Requested Feb. 25, 1991, Cl. 128/773, METHOD AND APPARATUS FOR THE ACOUSTIC DETECTION AND ANALYSIS OF JOINT DISORDERS, Thomas Gay, et al., Owner of Record: *Arthroteck, Inc., Hartford, Conn.*, Attorney or Agent: Fishman, Dionne & Cantor, Windsor, Conn., Ex. Gp.: 335, Requester: Owner

4,838,552, Reexam. No. 90/002,293, Requested Mar. 8, 1991, Cl. 273/138A, MULTILINE SLOT MACHINE, Takashi Hagiwara, Owner of Record: *Sigma Enterprises, Inc., Tokyo, Japan*, Attorney or Agent: Brian D. Ogonowski, Skjerven, Morrill, MacPherson, et al., San Jose, Calif., Ex. Gp.: 334, Requester: Owner

4,904,922, Reexam. No. 90/002,287, Requested Feb. 27, 1991, Cl. 323/316, APPARATUS FOR CONVERTING BETWEEN DIGITAL AND ANALOG VALUES, Joseph H. Collies, Owner of Record: *Brooktree Corp., San Diego, Calif.*, Attorney or Agent: Roston & Schwartz, Los Angeles, Calif., Ex. Gp.: 212, Requester: Fliesler, Dubb, Meyer & Lovejoy, San Francisco, Calif.

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

K.W.C., Inc., Beachwood, Ohio, Reg. No. 1,150,436, for the mark "THE BEAR NECESSITIES", Canc. No. 18,852.

No-Glug Jug Corp., Jacksonville, Fla., Reg. No. 764,868, for the mark "NO-GLUG" (stylized), Canc. No. 19,142.

Lakeside Industries, Inc., West Hartford, Conn., Reg. No. 988,835, for the mark "SKIL-BALL" (stylized), Canc. No. 19,219.

Hussein Kabil, dba Green Grove Citrus, McAllen, Tex., Reg. No. 1,060,458, for the mark "TOPPER" and design, Canc. No. 19,270.

Hussein Kabil, dba Green Grove Citrus, McAllen, Tex., Reg. No. 1,082,817, for the mark "SUPREME" design, Canc. No. 19,271.

Day-Off, Inc., Newport Beach, Calif., Reg. No. 1,311,951, for the mark "DAY-OFF" and design, Canc. No. 18,469.

Ivy Associates, Inc., Glencoe, Ill., Reg. No. 917,869, for the mark "IVY PERSONNEL", Canc. No. 19,160.

Republic Paint & Varnish Co., Chicago, Ill., Reg. No. 560,266, for the mark "CONTRACTOR'S", Canc. No. 19,218.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For JEFFREY M. SAMUELS
Assistant Commissioner for Trademarks

PATENT NOTICES

Certificates of Correction For Week of April 16, 1991

Re. 33,041	4,858,253	4,888,756	4,903,143
Re. 33,135	4,860,960	4,888,791	4,903,556
4,629,514	4,863,436	4,889,291	4,903,681
4,714,055	4,863,852	4,889,398	4,903,930
4,735,889	4,863,883	4,889,525	4,904,516
4,760,044	4,864,301	4,889,614	4,904,782
4,774,096	4,866,248	4,890,290	4,905,297
4,777,861	4,866,324	4,890,325	4,906,121
4,778,282	4,866,494	4,890,772	4,906,674
4,782,856	4,866,710	4,890,986	4,907,169
4,785,487	4,867,475	4,891,207	4,907,476
4,786,309	4,870,391	4,891,610	4,907,490
4,786,766	4,871,136	4,892,282	4,907,680
4,796,359	4,871,979	4,892,579	4,907,699
4,810,749	4,873,607	4,892,630	4,907,742
4,811,250	4,874,924	4,892,947	4,907,977
4,816,394	4,875,059	4,893,038	4,908,694
4,816,942	4,875,885	4,893,051	4,909,252
4,824,680	4,876,332	4,893,138	4,909,650
4,829,929	4,877,040	4,894,199	4,910,813
4,830,498	4,877,051	4,894,302	4,911,536
4,835,104	4,877,853	4,895,627	4,911,643
4,835,412	4,878,086	4,895,662	4,911,695
4,839,385	4,878,261	4,895,711	4,912,217
4,843,617	4,879,470	4,895,865	4,912,558
4,844,560	4,880,507	4,896,233	4,916,476
4,845,262	4,880,657	4,896,237	4,917,453
4,849,010	4,880,702	4,896,683	4,917,490
4,850,575	4,880,997	4,897,610	4,918,020
4,851,526	4,881,543	4,897,700	4,821,606
4,851,768	4,882,282	4,897,750	4,922,053
4,852,376	4,883,026	4,898,031	4,930,807
4,853,084	4,883,294	4,898,437	4,943,573
4,853,319	4,884,079	4,899,106	4,956,901
4,855,586	4,884,499	4,899,166	4,961,991
4,855,753	4,884,666	4,900,053	4,965,094
4,856,862	4,885,183	4,900,258	4,973,644
4,856,869	4,885,712	4,901,335	4,976,082
4,857,768	4,886,978	4,901,403	4,987,244

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The following libraries, designated as Patent Depository Libraries (PDLs), receive current issues of U.S. Patents and maintain collections of earlier-issued patents. The scope of these collections varies from library to libary, ranging from patents of only recent years to all or most of the patents issued since 1790.

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Since there are variations in the scope of patent collections among the PDLs and in their hours of service to the public, anyone contemplating use of the patents at a particular library is urged to contact that library, in advance, about its collection and hours in order to avert possible inconvenience.

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GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director.	308-0661
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PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—CARLTON CROYLE Director	308-0771
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—JOSEPH J. ROLLA, Director.	308-0956
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP— 260 STEWART LEVY, Acting Director	308-0962
DESIGN, GROUP 290—ROBERT E. GARRETT, Director	308-0511
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	308-1113
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—N. GODICI, Director	308-1148
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—J. J. LOVE, Director	308-0858
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—JOHN KITTLE, Director	308-0861
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350— A. L. SMITH, Director	308-0651

Expiration of patents: The patents within the range of numbers indicated below expire during March 1991 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,795,014 to 3,800,328 inclusive
Plant Patents	3,501 to 3,534 inclusive

REEXAMINATIONS

APRIL 16, 1991

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B2 4,480,214 (1448th)

STARTER CIRCUIT FOR GASEOUS DISCHARGE LAMP

Gregory L. Sodini, Memphis, Tenn., assignor to Fl Industries, Livingston, N.J.

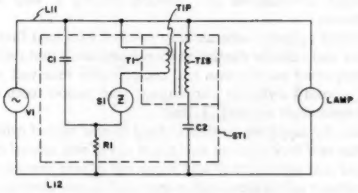
Reexamination Request No. 90/001,845, Sep. 19, 1989.

Reexamination Certificate for Patent No. 4,480,214, issued Oct. 30, 1984, Ser. No. 369,262, Apr. 16, 1982.

Reexamination Certificate B1 4,480,214, issued Jan. 31, 1989.

Int. Cl.[5] H05B *41/14*

U.S. Cl. 315—290



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–14** are cancelled.

[**1**. A starter for a gaseous discharge lamp adapted to be powered across the two conductors from an alternating current source, the starter circuit being connected across the two conductors in parallel with said lamp, said starter circuit including a first and second path both in parallel across the source, said first path including a series resistance-capacitance network in which there is a choke coil in series resistance with the resistance of said resistance capacitance network and further with the combination of a voltage threshold sensitive switch and pulse transformer primary in parallel with the capacitance of said network, said switch being adapted to close a circuit to the primary of the transformer when the threshold voltage of the switch is reached by the network, and said second path including the secondary of said pulse transformer coupled across said two conductors for transmitting high voltage, high frequency pulses to said lamp to start said lamp, with said pulse transformer having a turns ratio of approximately one to thirty to generate high voltage, high frequency starting current from said transformer secondary for starting said lamp.]

B1 4,489,022 (1449th)

FORMING COHERENT REFRACTORY MASSES

Pierre Robyn, Nivelles, and Pierre Deschepper, Charleroi, both of Belgium, assignors to Glaverbel SA, Brussels, Belgium

Reexamination Request No. 90/001,894, Nov. 20, 1989.

Reexamination Certificate for Patent No. 4,489,022, issued Dec. 18, 1984, Ser. No. 420,502, Sep. 17, 1982.

Claims priority, application United Kingdom, Nov. 25, 1981, 8135569

Int. Cl.[5] F27D *1/16*

U.S. Cl. 264—30

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13** and **14** is confirmed.

New claims **15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27** and **28** are added and determined to be patentable.

1. A process of forming a refractory mass comprising burning particles of exothermically oxidisable material having an average grain size less than 50 μm while mixed with particles of incombustible refractory material during projection of the mixture against a surface to form a coherent refractory mass on said surface, said oxidisable material comprises silicon and aluminum, the aluminium being present in an amount not exceeding 9% by weight of the total mixture, and wherein the aluminum and silicon are together present in an amount not exceeding 15% by weight of the total mixture.

B1 4,732,026 (1450th)

METHOD OF LAP WELDING EVENTUAL CAN BLANK CONSISTING OF METAL SHEET OR THE LIKE

Kunikatsu Ban, Mie, Japan, assignor to N.P.W. Technical Laboratories, Mie, Japan

Reexamination Request No. 90/001,872, Oct. 30, 1989.

Reexamination Certificate for Patent No. 4,732,026, issued Mar. 22, 1988, Ser. No. 838,502, Mar. 11, 1986.

Claims priority, application Japan, Mar. 11, 1985, 60-48699

Int. Cl.[5] B21D *39/02, 51/28;* **B23K** *11/06*

U.S. Cl. 72—52

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–4** are cancelled.

New claims **6** and **8** (renumbered **6** and **5**) are added and determined to be patentable.

5. A method of lap welding a blank of metal sheet or a covered metal sheet to form a can, comprising the steps of: overlapping both edge portions of the blank to form a lap joint having a width being less than three times the thickness of said blank, simultaneously heating and applying a pressure to the lap joint in an air atmosphere by feeding the lap joint between upper and lower wire electrodes held by upper and lower roller electrodes, respectively, thereby welding the lap joint, said lap joint being electrically heated during application of pressure to said lap joint between upper and lower wire electrodes, each of said upper and lower electrodes having a contact width more than three times width of said lap joint, wherein sequences of thermal press bond sections are formed without the formation of a melting zone in said air atmosphere, each of said thermal press bond sections having a vicker's hardness ranging from 170 to 210, and the center-to-center distance between adjacent thermal press bond sections being set to be in a range of 0.8±0.2 mm.

B1 4,773,812 (1451st)

RECEPTACLE LIFT AND SLIM PROFILE POWER UNIT THEREFOR

Jimmy O. Bayne, and Robert E. Wyman, both of Simpsonville, S.C., assignors to Bayne Machine Works, Inc.

Reexamination Request No. 90/001,993, Apr. 10, 1990.

Reexamination Certificate for Patent No. 4,773,812, issued Sep. 27, 1988, Ser. No. 44,045, Apr. 29, 1987.

Int. Cl.[5] B65F *3/02*

U.S. Cl. 414—408

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–15** is confirmed.

Claims **22–24** are cancelled.

Claims **16, 19–21,** and **25** are determined to be patentable as amended.

Claims **17, 18, 26** and **27,** dependent on an amended claim, are determined to be patentable.

New claims **28–31** are added and determined to be patentable.

25. A hydraulic rotary motor [as in claim **24** further], comprising:

housing means adapted for the controlled flow of hydraulic fluids therethrough, said housing means being defined by joined upper and lower blockheads, and having hydraulic fluid ports on opposing ends thereof for the complementary flow of fluids therethrough relative said housing means;

piston means received in said housing means for controlled reciprocably movement therein actuated by the passage of hydraulic fluid through said housing means in one direction therethrough at a time, with complementary fluid exit and entry through said opposing end fluid ports, said piston means including a piston rod supporting rack teeth thereon;

pinion gear output shaft means, operatively associated with said housing means and projecting therefrom through an opening defined with a cooperating seal member to prevent escape of any hydraulic fluid from said housing means other than through one of said fluid ports thereof, for being rotatably driven by engagement of pinion teeth thereof with said rack teeth of said piston means;

whereby said output shaft means may be rotated for driving a load by controlled reciprocable movement of said piston means in one direction at a time with said pinion teeth and rack teeth immersed in said hydraulic fluid within said housing means for maintenance-free lubrication thereof;

said housing means includes at least one cylinder for reciprocable receipt of said piston means, with said piston rod thereof being reciprocably movable on approximately one longitudinally bi-sected side of said cylinder, and said output shaft means being receivable in generally the other longitudinally bi-sected side of said cylinder so that engagement of said pinion and rack teeth is provided within said cylinder, whereby hydraulic fluid received in such cylinder provides lubrication for such teeth;

said output shaft means is rotatably mounted transversely to the direction of movement of said piston rod, and includes two opposing ends which project from said housing means, both of which are adapted for rotatably driving a load secured thereto;

a second cylinder substantially parallel with said first cylinder and radially displaced therefrom, such that rack teeth supported on a piston rod reciprocally received in such [second] cylinder also engage said pinion teeth of said output shaft means[.]; and

means for supplying hydraulic fluid to said second cylinder so that said rack teeth on said piston rod of said second cylinder and said rack teeth of said piston rod of said first mentioned cylinder jointly drive said output shaft in one direction or the other.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 33,570

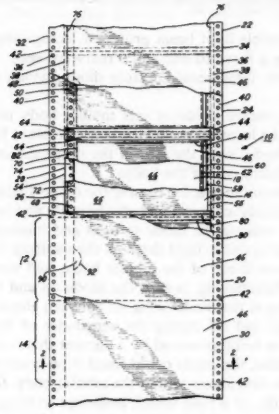
CONTINUOUS FILLED ENVELOPE ASSEMBLY WITH NON-MARGINAL SPACED FEED HOLES

Robert E. Ashby, Quakertown, Pa., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Original No. 4,645,123, dated Feb. 24, 1987, Ser. No. 282,589, Jul. 13, 1981. Application for reissue Dec. 14, 1988, Ser. No. 284,385

Int. Cl.[5] B65D *27/10*

U.S. Cl. 229—69 12 Claims



1. A continuous business form assembly constituting a filled envelope assembly and comprising four webs, each of three of the webs being continuous in a longitudinal direction and having two spaced marginal edges in a transverse direction, a marginal row of spaced feed holes extending along a each marginal edge, a line of marginal perforations extending along each marginal row of spaced feed holes, the marginal row of spaced feed holes and marginal perforations thereby defining two continuous, marginal feed strips along the two marginal edges, and each of the three webs further having a line of non-marginal perforations adjacent a first of the lines of marginal perforations and two spaced transverse lines of perforations, the line of non-marginal perforations defining a non-marginal strip adjacent one of the marginal feed strips and the transverse lines of perforations defining a sheet on the web;

the three webs being superimposed with the feed holes, perforations, feed strips, and sheets thereof superimposed and the three webs being attached along the non-marginal strips;

two of the three webs being first and second webs and the other of the three webs being an intermediate third web located between the first and second webs, the intermediate third web defining transversely extending die cuts along the transverse lines of perforations of the intermediate third web between the marginal lines of perforations thereof, the die cuts thereby interrupting the transverse lines of perforations of the intermediate web between the marginal lines of perforations thereof;

the first web being attached to the second web along the transverse lines of perforations and through the die cuts, to form an envelope of the sheets of the first and second webs and an envelope insert of the the third web;

the intermediate third web having a non-marginal row of spaced feed holes extending along the line of non-marginal perforations of the intermediate third web in the non-marginal strip of the intermediate third web, the non-marginal strip of the third web thereby being a non-marginal feed strip;

the continuous business form assembly further comprising a non-continuous fourth web superimposed on the intermediate third web between the intermediate third web and the first web, the non-continuous fourth web having transverse edges in the transverse direction along the die cuts and marginal edges spaced in the transverse direction, one of the marginal edges of the non-continuous fourth web extending along the first of the lines of marginal perforations of the third web, the fourth web further having a line of marginal perforations superimposed upon the line of non-marginal perforations of the third web and a row of spaced feed holes superimposed on the non-marginal row of spaced feed holes of the third web, the non-continuous fourth web being attached along the non-marginal strip of the third web to the third web.

5. A continuous business form assembly constituting a filled envelope assembly and comprising four webs, each of three of the webs being continuous in a longitudinal direction and having two spaced marginal edges in a transverse direction, a marginal row of spaced feed holes extending along each marginal edge, the marginal row of spaced feed holes thereby defining two continuous, marginal feed strips along the two marginal edges, and each of the three webs further having a line of non-marginal perforations and two spaced transverse lines of perforations, the line of non-marginal perforations defining a non-marginal strip adjacent one of the marginal feed strips; and the transverse lines of perforations defining a sheet on the web;

the three webs being superimposed with the feed holes, perforations, feed strips, and sheets thereof superimposed and the three webs being attached along the non-marginal strips;

two of the three webs being first and second webs and the other of the three webs being an intermediate third web located between the first and second webs, the intermediate third web defining transversely extending die cuts along the transverse lines of perforations of the intermediate third web between the marginal feed strips thereof, the die cuts thereby interrupting the transverse lines of perforations of the intermediate web between the marginal feed strips thereof;

the first web being attached to the second web along the transverse lines of perforations and through the die cuts, to form an envelope of the sheets of the first and second webs and an envelope insert of the third web;

the intermediate third web having a non-marginal row of spaced feed holes extending along the line of non-marginal perforations of the intermediate third web in the non-marginal strip of the intermediate third web, the non-marginal strip of the third web thereby being a non-marginal feed strip;

the continuous business form assembly further comprising a non-continuous fourth web superimposed on the intermediate third web between the intermediate third web and the first web, the non-continuous fourth web having transverse edges in the transverse direction along the die cuts and marginal edges spaced in the transverse direction, one of the marginal edges of the non-continuous fourth web extending along the first of the marginal feed strips of the third web, the fourth web further having a line of marginal perforations superimposed upon the line of non-marginal perforations of the third web and a row of spaced feed holes superimposed on the non-marginal row of spaced feed holes of the third web, the non-continuous fourth web being attached along the non-marginal strip of the third web to the third web.

9. A continuous business form assembly including a plurality of filled envelope assemblies, each of which includes at least a pair of first and second outer webs which comprise a plurality of first

envelopes, said first and second outer webs extending continuously in a longitudinal direction, each of said first envelopes being defined in part by transversely extending lines of perforations spaced longitudinally of each other along said first and second webs; said first and second webs having a plurality of feed holes arranged longitudinally along marginal edges of said first and second webs; each of said assemblies further comprising a pair of insert envelope webs and an insert web, wherein at least one of said pair of insert envelope webs and said insert web are laterally abbreviated with respect to said first and second outer webs, and another of said pair of insert envelope webs and said insert web extend across the entire width of the web, and further wherein said pair of insert envelope webs and said insert web each include feed means permitting said insert envelope webs and said insert web to be fed independently of said first and second outer webs.

Re. 33,571

SYSTEM AND METHOD FOR AUTOMATIC TRANSACTION

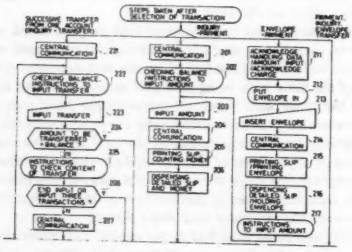
Kenichi Takahashi, Niigata, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Original No. 4,692,600, dated Sep. 8, 1987, Ser. No. 736,702, May 22, 1985. Application for reissue Sep. 8, 1989, Ser. No. 404,906

Claims priority, application Japan, Jul. 31, 1984, 59-159060

Int. Cl.[5] G06K *5/00*

U.S. Cl. 235—379 **43 Claims**



11. A system for automatic banking transactions, comprising:

medium reader means for receiving a medium from a customer and for reading data from said medium in which information identifying said customer is recorded;

an operation unit provided with at least one combination transaction selection key to input the selection of the combination transaction, and at least one number key to input numerical values by the customer;

display means for displaying instructions and data for operation to the customer;

control means for identifying the customer in response to the information identifying said customer and providing customer banking information;

said control means further performing a first banking transaction based upon said customer banking information and one selection of said combination transaction selection key and thereafter performing a second banking transaction based upon the customer banking information and said selection of the combination transaction selection key with automatic flow from the first banking transaction to the second banking transaction in response to only one reading data from said medium and only one selection of said combination transaction selection key.

Re. 33,572

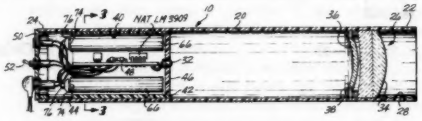
INVISIBLE LIGHT BEAM PROJECTOR AND NIGHT VISION SYSTEM

Brad E. Meyers, c/o B.E. Meyers Co. Inc., 17525 NE. 67th Ct., Redmond, Wash. 98052

Original No. 4,707,595, dated Nov. 17, 1987, Ser. No. 3,253, Dec. 29, 1986. Continuation of Ser. No. 694,444, Jan. 30, 1985, abandoned. Application for reissue Jul. 13, 1989, Ser. No. 379,271

Int. Cl.[5] G01J *1/00*

U.S. Cl. 250—504 R **46 Claims**



1. An invisible light beam projector, comprising: a tubular body having a forward end and a rearward end;

an invisible light beam emitting diode having an emitting lens;

mounting means inside of said tubular body mounting the diode at a location within the body, between the two ends of the body, with the lens of the diode directed towards the forward end of the body;

control circuit means for *causing* the diode [adapted] to be repetitiously charged and discharged, and on each discharge causing the diode to light and transmit a narrow beam of invisible light through the emitting lens towards the forward end of the tubular body, said control circuit means functioning to turn the diode on and off at a rate resulting in the diode being on between about 10–20% of the time and off during the remainder of the time, and when on being powered by a current that is substantially larger than the diode could stand if on continuously; and

projection lens means within the tubular body, forwardly of the diode, of a type which is always in focus in a range between a predetermined minimum distance from the light projector and infinity, said projection lens means being positioned and adapted to receive the narrow beam of invisible light from the diode lens and enlarge and collimate this light into a collimated beam of invisible light in sharp focus, to produce a lighting spot having a sharp and definite edge.

Re. 33,573

FOLDING ICE-CREAM CARTON, CARTON BLANK AND METHOD

Thomas W. Froom, 10 Burncoat Way, Pittsford, N.Y. 14534

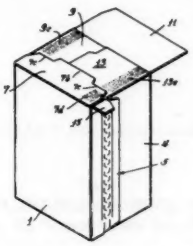
Original No. 4,526,563, dated Jul. 2, 1985, Ser. No. 530,367, Sep. 8, 1983. Division of Ser. No. 331,557, Dec. 17, 1981, Pat. No. 4,431,129, which is a division of Ser. No. 158,167, Jun. 10, 1980, Pat. No. 4,328,656, which is a division of Ser. No. 842,747, Oct. 17, 1977, Pat. No. 4,239,115. Application for reissue Mar. 9, 1987, Ser. No. 23,845

Int. Cl.[5] B65B *43/08, 43/26*

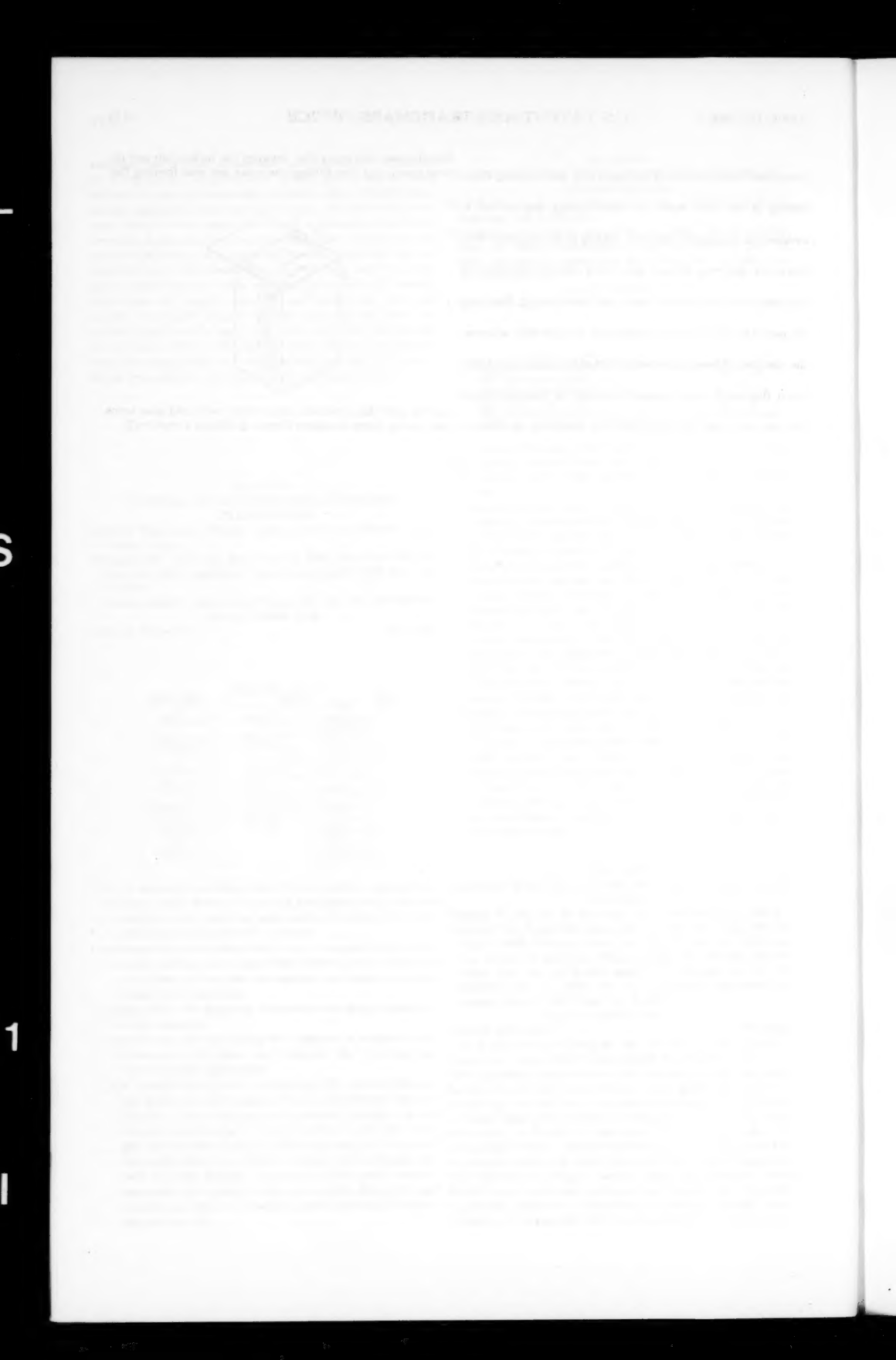
U.S. Cl. 493—151 **17 Claims**

1. A method for closing an end of a carton tube formed of front, rear, cover, and bottom panels fastened together into a tube by means of a front cover flap fastened to the front panel, having respectively connected to said panels and said front cover flap, by fold lines, front and rear panel inner end wall-forming flaps, one of which is adapted to overlie the other when they are folded in; a side cover flap having a tuck-in tab projecting from the mid-portion thereof, which side cover flap is adapted, when it is folded in, to overlie the overlying inner end wall-forming flap; a bottom panel flap adapted, when folded in, to overlie the tuck-in tab of the side cover flap; and, a glue-flap extension of the front cover flap adapted, when folded in, to overlie the fold-in side cover flap, which method

comprises folding in one of the inner end wall-forming flaps, folding in the other inner end wall-forming flap so that it overlies the one already folded in, folding in the side cover flap thereover, applying strips of glue along and adjacent the fold lines between the folded-in inner end wall-forming flaps and the panels to which they are connected, the glue strip adjacent the rear panel [being terminated short of the folded-down side cover flap and] being disposed between the tuck-in tab and the rear panel, and the other glue strip extending up over the folded-down side cover flap between the tuck-in tab and the front panel, and then folding the outer end wall-forming flap



and the glue-flap extension into contact with said glue strips and causing them to adhere thereto [without a mandrel].



PLANT PATENTS

GRANTED APRIL 16, 1991

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,496

MINIATURE ROSE PLANT NAMED 'LUIS DESAMERO'

Cecilia D. Bennett, deceased, late of Chula Vista, Calif., by Susan O'Brien, executrix, assignor to Susan O'Brien, special administrator, Chula Vista, Calif.

Filed Jan. 2, 1990, Ser. No. 460,233
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—8 **1 Claim**

1. A new and distinct variety of miniature rose plant named, 'Luis Desamero' of hardy, dwarf, vigorous growth, well-branched and attractive in appearance, substantially as illustrated and described, characterized by its hybrid tea-form blooms, ranging from near Primrose Yellow to near Mimosa Yellow, with flowers borne usually one to a stem but occasionally in sprays of 3 to 5 or more.

7,497

ALMOND TREE, CRUZ

Irwin H. Bonds, Hilmar, Calif., assignor to Ruben A. Cruz, Modesto, Calif.

Filed Oct. 16, 1989, Ser. No. 422,412
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree substantially as illustrated and described and which is somewhat similar to the Nonpareil almond tree (believed unpatented) which matures at approximately the same time of the season, but which is distinguished therefrom and characterized principally as to novelty, by producing a crop which is ripe for commercial harvesting and shipment approximately seven to ten days after the Nonpareil variety of almond tree and which further has a longer blooming period than the Nonpareil variety of almond tree, the new variety of almond tree "Cruz" facilitating the pollenization of other almond trees growing in the immediate geographical vicinity thereof.

7,498

HEATHER PLANT NAMED ERICA 'AUGUSTINA'

Bruno L. Imazio, 197 Sunset Beach Rd., Watsonville, Calif. 95076

Filed Aug. 14, 1989, Ser. No. 393,674
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct cultivar of Heather plant named Erica 'Augustina', substantially as herein shown and described characterized particularly as to novelty by its early blooming habit; attractive deep, rich rose-magenta color; and vigorous long stems desirable for cut flowers.

7,499

GERANIUM PLANT NAMED FISPOL

Ingeborg Schumann, Hoehr-Grenzhausen, Fed. Rep. of Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Oct. 25, 1989, Ser. No. 426,564
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium plant named Fispol, as illustrated and described.

7,500

CHRYSANTHEMUM PLANT NAMED DESIREE

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 14, 1989, Ser. No. 435,820
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct Chrysanthemum plant named Desiree, as described and illustrated.

7,501

AGLAONEMA PLANT NAMED SUPERBA

B. Frank Brown, Palm Bay, Fla., assignor to Hartman Plant Laboratories, Inc., Sebring, Fla.

Filed Jul. 5, 1989, Ser. No. 375,603
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct cultivar of Aglaonema plant named 'Superba', as described and illustrated.

PATENTS

GRANTED APR. 16, 1991

ERRATA

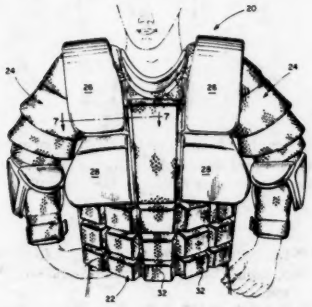
For CLASS	See PATENT NO.
047-073	5,007,135
074-866	5,007,147
280-248	5,007,498
296-097	5,007,532
222-571	5,007,557
223-089	5,007,562
424-451	5,007,790
434-206	5,007,840
439-189	5,007,888
204-192	5,008,003
106-450	5,008,223
503-207	5,008,231
503-227	5,008,232
585-011	5,008,460
235-483	5,008,552
323-315	5,008,586
364-200	5,008,786

PATENTS

GRANTED APRIL 16, 1991

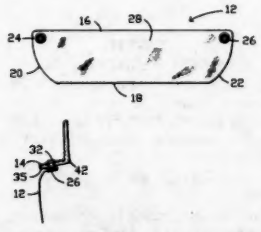
GENERAL AND MECHANICAL

5,007,108
CHEST PROTECTOR
Raymond Laberge, St. Luc, and Robert Beauregard, L'Acadie, both of Canada, assignors to Sport Maska Inc., St. Hyacinthe, Canada
Filed Aug. 29, 1989, Ser. No. 399,883
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—2 **18 Claims**



1. A chest protector for a sports player, said chest protector comprising:
a chest protector section, and
two arm protector sections secured at one end to said chest protector section,
each of said two arm protector sections including
a plurality of padding sections, each having two ends and each having at least one pad member, one of said two ends of at least one padding section being secured to an adjacent padding section centrally, intermediate the ends of the adjacent padding section by moving means for slidably mounting one padding section with respect to an adjacent padding section.

5,007,109
HEAD GEAR HAVING PROTECTIVE LENS
Robert L. Wheeler, 823 A E. Gulf Blvd., Indian Rocks Beach, Fla. 33535
Filed Oct. 20, 1989, Ser. No. 425,617
Int. Cl.[5] A42B *1/06*
U.S. Cl. 2—10 **19 Claims**



1. A device for shielding the eyes from direct or reflected sunlight, comprising:
a thin flexible lens of flat configuration when in repose;
said lens having a forward surface, a rearward surface, and a predetermined configuration;
a first pair of releasable fastening members being fixedly secured to opposite upper corners of said forward surface of said lens;
each member of said first pair of fastening members having an operative part that projects upwardly from said forward surface;
a headwear member;
a forwardly projecting bill member integral to said headwear member;
said bill member having a top surface and a bottom surface;
said bill member having a leading edge and an arcuate trailing edge that follows the contour of said headwear member;
a second pair of releasable fastening members fixedly secured to said bottom surface of said bill member at opposite ends thereof in closely spaced relation to said trailing edge;
said first and second pair of fastening members being of independent construction relative to one another;
said first and second pair of fastening members being releasably securable to one another;
said lens having a gradual bend formed therein adjacent said respective upper corners of said lens when said first and second independently constructed fastening members are releasably secured to one another, said respective upper corners being in closely spaced, parallel relation to said bill member bottom surface when said first and second independently constructed fastening members are releasably secured to one another.

5,007,110
FOCUS VISION VISOR
Charles A. Gilbert, P.O. Box 979, USSAH, Washington, D.C. 20317
Filed Jul. 12, 1990, Ser. No. 551,343
Int. Cl.[5] A42B *1/06*
U.S. Cl. 2—10 **3 Claims**

1. A focus vision visor of the type adapted for fitting to the crown of a headpiece comprising:
(a) a horizontally extending visor defining a front edge, side edges and a rear edge adapted for attachment to the crown;
(b) a pair of blinders secured to each side edge of said visor so as to depend vertically thereof, each blinder being made of resilient material so as to abut the human cheek and having an inside and an outside defined by top, bottom, rear and front, each said blinder being pivotably secured at its top so as to be inset with respect to the side edges of said visor such that the side edges of the said visor overhang said blinders, said blinders being stitched to the side edges of said visor so as to be biased inwardly, the inner edge is foldable within the crown and said blinders being conformed such that their inner edge is foldable within the inside of the crown; and
(c) securement means attached to the underside of said visor and the in side of said blinder, such that each side blinder

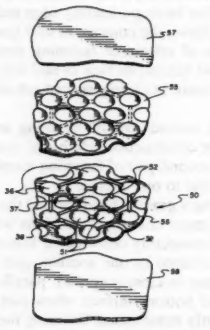
may be stored in horizontal abutment with the underside of said visor.

5,007,111

SHOCK ABSORBING BOOT AND CUSHIONING MATERIAL

Mark B. Adams, 206 Ransui Mansion, 1-10 Minamizemi, Gifu Shi, Gifu Ken, Japan T502

Filed Sep. 14, 1989, Ser. No. 407,332
Int. Cl.[5] A41D *13/06*
U.S. Cl. 2—22 **29 Claims**



1. A cushion pad, comprising a plurality of fluid containing resilient cells or compartments as a dispersion array formed in a material; tube means for allowing fluid flow between cells or compartments in said dispersion array of cells, where each dispersion array comprises two or more cells with a first cell, wherein, for said first cell in each said dispersion array, at least one proximal cell is provided, with such proximal cell being a cell that is closer to the first cell than any other cell, and for each first cell at least one distal cell exists in each said dispersion array, a distal cell being any cell that is not a proximal cell; and the first cell in each dispersion array is connected by tube means to at least one distal cell.

5,007,112

PROTECTIVE COVERALLS WITH IMPROVED VENTILATION

Milton A. Lewis, Jr., Richmond, Va.; Jeffrey S. Mason, Covington, Ind.; Carson B. Swinford, Danville, Ill., and Timothy R. Wiseman, Sr., Richmond, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

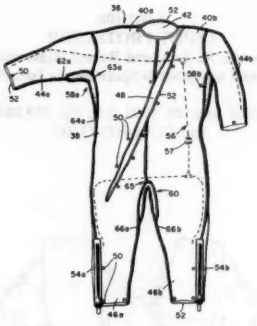
Filed Nov. 30, 1989, Ser. No. 444,497
Int. Cl.[5] A41D *13/00, 13/02*
U.S. Cl. 2—79 **8 Claims**

1. Improved one-piece protective coveralls of the type affording a barrier and thermal protection against hot and/or corrosive liquids having a generally continuous outer shell of woven aramid fabric covered by a liquid impervious layer and an inner multilayer thermally insulating liner inside of said outer shell, said inner liner being fabricated from at least one layer of low density nonwoven fabric fastened to a woven fabric, said outer shell and inner liner having corresponding torso, sleeve and leg portions, wherein the improvement comprises:

an elongate underarm opening under each arm of said liner extending downwardly from the position of the wearer's armpit into and along the underside of the sleeve and downwardly into and along the side of the torso portion;

an elongate leg inseam opening on the underside of the torso portion of said liner fabric and extending from position of the wearer's crotch downwardly into and along the inside of each leg; and

a stretchable, air permeable fabric attached to said liner fabric and covering and defining the size and shape of said openings;



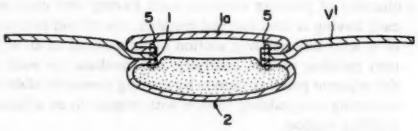
whereby ventilation and greater freedom of movement is provided in said inner liner without substantially decreasing the protection provided by the coveralls.

5,007,113

CLOTHING, ESPECIALLY OF THE PULLOVER TYPE

Robert Bouadjadja, 133 rue Antoine-Durafour, 42100 St. Etienne, France

PCT No. PCT/FR88/00425, § 371 Date Apr. 27, 1989, § 102(e) Date Apr. 27, 1989, PCT Pub. No. WO89/01743, PCT Pub. Date Mar. 9, 1989
PCT Filed Apr. 24, 1988, Ser. No. 358,348
Int. Cl.[5] A41B *1/00, 1/02, 1/18;* **A41D** *27/08*
U.S. Cl. 2—115 **4 Claims**



1. An article of clothing comprising:

a fabric layer suitable for wearing;

at least one decorative element attached to an outer surface of said fabric layer, said at least one decorative element being stuffed with material to form a relief;

at least one inner layer attached to an inner surface of said fabric layer along the contours of said at least one decorative element; and,

wherein an inside of said fabric layer is smooth and stitchless.

5,007,114

HUMIDITY-RETAINING MASK

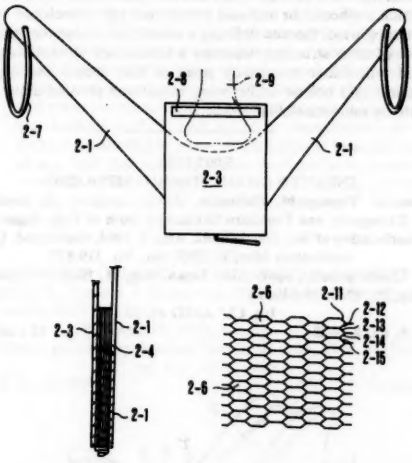
Yasuhiko Numano, Tokyo, Japan, assignor to Japan Air Lines Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1989, Ser. No. 371,975
Claims priority, application Japan, Jul. 14, 1988, 63-173762; Apr. 15, 1989, 1-94329
Int. Cl.[5] A61M *16/00*
U.S. Cl. 2—206 **7 Claims**

1. A humidity retaining mask for humidifying dry air of an environment to be respired by a wearer of the mask, said mask comprising:

an expandable mask body consisting of a honeycomb structure of moisture absorbing material defining a plurality of tubular cavities when the mask body is in an expanded state, said mask body having a recessed portion in an

upper part thereof for accommodating the nostrils of a wearer of the mask and a lower part opposed to said upper part, and said tubular cavities extending between and open at the upper and lower parts of the mask body; and



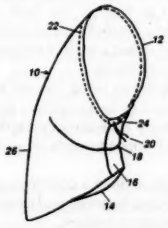
ear straps attached to said mask and adapted to extend over the ears of a wearer of the mask to secure said mask body in a position in which the nose of the wearer confronts said recessed portion.

5,007,115

ADJUSTABLE HEAD AND NECK GARMENT

Nancy A. Denbow, 31197 Niakwa Rd., Evergreen, Colo. 80439, and Anne M. Bertino, 9605 S. 48th St., #2047, Phoenix, Ariz. 85044

Filed Feb. 13, 1990, Ser. No. 479,342
Int. Cl.[5] A42B *1/06, 1/04*
U.S. Cl. 2—208 **8 Claims**



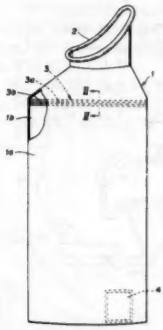
1. An adjustable head and neck garment comprised of a tubular shaped body, with the sides of the tube varying in length from a maximum on one side of said tube to a minimum on the opposite side, such that the ends of said tube are at acute angles to the body of said tube, wherein a longitudinal cross section of said tube which intersects both said maximum and minimum length sides of said tube has an essentially trapezoidal shape.

5,007,116

PORTABLE URINAL

Masao Yamamoto, Tokyo, Japan, assignor to K. K. Musshu, Tokyo, Japan

Filed Nov. 21, 1988, Ser. No. 274,258
Claims priority, application Japan, Aug. 16, 1988, 62-107850[U]
Int. Cl.[5] A47K *11/12*
U.S. Cl. 4—144.2 **1 Claim**



1. A portable urinal comprising:

a urine-storage bag constructed of a waterproof material, said urine-storage bag being provided at its top with a mouth element that can be located so as to cover the genitourinary area of a human body when in use; and a fastener located below said mouth and comprising a grooved channel provided along one half of the interior wall of said urine-storage bag and a mating ridge which is provided on the other half of the interior wall of said urine-storage bag, said ridge is adapted to engage said grooved channel in a snap-fit manner, both said grooved channel and said ridge extending across the entire width of said urine-storage bag so as to seal off said bag adjacent to said mouth element, and

a pouch positioned within said bag which is constructed of a water-permeable, water-insoluble material, said pouch being filled with a water-absorbing agent which when contacted with a portion of said urine in said bag will swell to form a gel, the wall strength of said pouch being such that the pouch will break into fragments when said water-absorbing agent becomes swollen with said urine, and thereby dispense said agent to the remainder of said urine in said bag to render a gel of the entire contents of said bag.

5,007,117

VACUUM TOILET SYSTEM WITH SIMULTANEOUS RINSE AND DISCHARGE

Sven Oldfelt, Vaxholm, Sweden, and Gary L. Stahl, Winnebago, Ill., assignors to Oy Wärtsilä Ab, Helsinki, Finland

Filed Dec. 21, 1988, Ser. No. 288,620
Int. Cl.[5] E03D *11/00*
U.S. Cl. 4—432 **18 Claims**

1. An improved vacuum toilet system comprising:

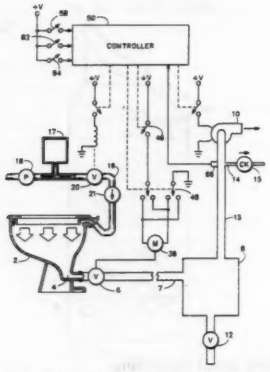
a waste-receiving bowl defining an interior space for receiving waste material and having an outlet,

a sewer pipe defining an interior space that can be placed at a pressure that is lower than that in the interior space of the waste-receiving bowl.

a discharge valve connected between the outlet of the waste-receiving bowl and the sewer pipe for controlling passage of material between the waste-receiving bowl and the sewer pipe,

rinse means for controlling supply of rinse liquid to the waste-receiving bowl, and

control means connected to the discharge valve and to the rinse means and responsive to a user stimulus to open and close the discharge valve in accordance with a predetermined operating cycle comprising an opening phase, an open phase and a closing phase, wherein the improvement resides in that, in order to reduce the level of noise gener-



ated by induction of air into the sewer pipe during the operating cycle of the discharge valve while maintaining a low level of water consumption, the control means control the rinse means in such manner that rinse liquid is supplied during the opening phase of the operating cycle of the discharge valve but substantially no rinse liquid is supplied while the discharge valve is closed or during the open phase of the operating cycle of the discharge valve.

5,007,118

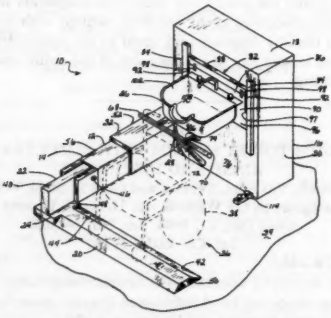
HEAD CARE STATION AND KIT AND METHOD FOR RECLINING THE OCCUPANT OF A WHEELCHAIR AGAINST A HEAD SUPPORT

Larry W. Ebersole, 7826 Newlin Dr., Fort Wayne, Ind.

Filed Mar. 30, 1989, Ser. No. 330,705

Int. Cl.[5] A45D *19/00, 19/08, 44/10*

U.S. Cl. 4—515 **29 Claims**



1. A head care station comprising a foundation member having a front portion and a back portion, a pedestal mounted on said back portion, a wheelchair jack mounted to said front portion, said wheelchair jack having a bearing member movable between a floor position and an elevated position, a head support connected to said pedestal, said head support being movable between a lower position and an upper position, a bolster connected to said pedestal, said bolster being disposed at a vertical elevation above said elevated position of said wheelchair jack, said wheelchair jack and said bolster defining between them in conjunction with the floor upon which said head care station rests a wheelchair occupancy space.

21. A head care station comprising a bolster and a wheelchair jack disposed in spaced relation to said bolster, said wheelchair jack having a bearing member pivotably movable relative to said bolster between a floor position and an elevated position, said wheelchair jack and said bolster and the floor on which a wheelchair and said bolster and said wheelchair jack are supported, thereby defining a wheelchair occupancy space free of other structure, whereby a wheelchair on said floor in said wheelchair occupancy space is held secure and urged against said bolster while being raised and pivoted about its axle by said wheelchair jack.

5,007,119

INFANT'S CHAIR FOR SHAMPOOING

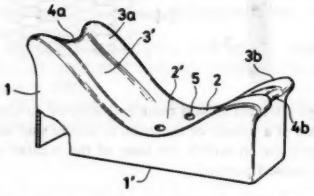
Sumiko Yamaguchi, Shizuoka, Japan, assignor to Sumiko Yamaguchi and Tomohiro Shirakawa, both of Fuji, Japan

Continuation of Ser. No. 637,602, Aug. 3, 1984, abandoned. This application Mar. 1, 1989, Ser. No. 319,872

Claims priority, application Japan, Aug. 11, 1983, 58-145632; Sep. 29, 1983, 58-149613

Int. Cl.[5] A45D *44/02*

U.S. Cl. 4—523 **13 Claims**



1. A chair for supporting varying sizes of infants during a shampooing operation, comprising:

a base portion having a bottom horizontal surface for placement upon a support surface, and an upper infant supporting surface having opposite ends and opposite lateral edges;

said infant supporting surface comprising a smoothly depressed concave seating portion adapted to receive an infant's buttocks, and first and second back supporting portions extending upwardly from opposite ends of said seating portion for alternatively supporting an infant's back, said back supporting portions being of dissimilar length and each being provided at its upper end with a hollow adapted to support the back of an infant's neck while said infant's buttocks are supported by said seating portion and said infant's back is supported by one of said back supporting portions;

each one of said hollows being formed by a concavity centered with respect to its respective back supporting portion, said concavity extending upwardly toward a respective one of said opposite ends of said infant supporting surface;

said seating portion defined a continuously smooth concave curvature extending between said opposite lateral edges of said infant supporting surface;

said first back supporting portion including an inclined surface extending upwardly in a first direction at a first predetermined angle with respect to said concave seating portion from one end of said smoothly depressed concave seating portion of said chair toward one end of said chair and having a first predetermined length for stably supporting the torso portion of a first infant's body, having a first length dimension, as defined between the buttocks of said first infant and the neck of said first infant, which is char-

acteristic of an average sized child within the range of 2–3 years of age; and

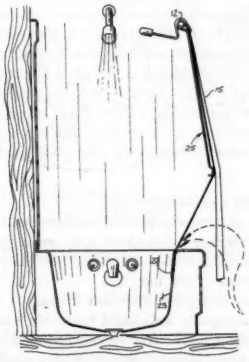
said second back supporting portion including an inclined surface extending upwardly in a second direction, opposite to said first direction, at a second predetermined angle with respect to said concave seating portion from the other end of said smoothly depressed, concave seating portion of said chair toward the other end of said chair and having a second predetermined length, which is less than said first predetermined length of said first inclined surface, for stably supporting the torso portion of a second infant's body, having a second length dimension, as defined between the buttocks of said second infant and the neck of said second infant, which is smaller in length than said torso portion of said first infant supported upon said first inclined surface, and which is characteristic of an average sized child of up to and including at least one year of age, said first and second inclined surfaces, together with said smoothly depressed, concave seating portion, having a substantially V-shaped configuration.

5,007,120

SHOWER CURTAIN LINER CONTROL DEVICE

Charles A. Annand, 4 Ridgewood Drive, Truro, Nova Scotia, Canada B2N 5C5

Filed Apr. 23, 1989, Ser. No. 344,994
Claims priority, application Canada, Jan. 20, 1989, 588731
Int. Cl.[5] A47K *3/00*
U.S. Cl. 4—558 **9 Claims**



1. A shower curtain control device for controlling the position of a shower curtain having an inner and outer surface of the type suspended form a curtain rod of circular cross section having an inner surface toward the tub and an opposite outer surface positioned above an outside rim of a bathtub, said curtain being attached to curtain rod hooks slidable along said curtain rod to enable the curtain to be extended from an open position to a closed position in which said inner surface of the curtain defines one side of a shower area, said device comprising:

a mounting section having an opening for receiving said curtain rod and permitting both rotational pivoting and sliding movement of said device on said curtain rod,

said mounting section including an inverted U-shape defining the rod receiving opening between a pair of downwardly extending legs jointed by a curved mid-portion for riding on top of said rod, one leg extending on the side of said inner surface of said curtain rod, the other leg extending on the side of said outer surface of said curtain rod,

an elongated member connected to said other leg and depending therefrom and having a lower end portion for engagement with the inner surface of the curtain at a location spaced between the support rod and rim of said bathtub, and

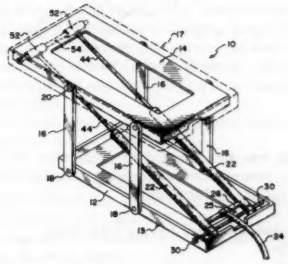
weight means including an elongated portion joined to said one leg of said pair and extending at an angle relative thereto projecting over said shower area for causing pivoting of said mounting section in a direction to swing said lower end portion of said elongated member outward from the shower area, whereby said curtain is held outward relative to the outer rim of said bathtub.

5,007,121

HYDRAULIC LIFT FOR BATHTUBS

Robert J. McEathron, 857 Townsite Road, Nanaimo, British Columbia, Canada V9S 1L8

Continuation of Ser. No. 244,700, Sep. 14, 1988, abandoned. This application May 29, 1990, Ser. No. 529,789
Int. Cl.[5] A47K *3/12*
U.S. Cl. 4—566 **4 Claims**



1. A device for raising and lowering a person in a bathtub, comprising:

(a) a base frame sized to fit in the bottom of a standard bathtub and having first and second opposing sides and forward and rearward ends;

(b) a substantially horizontal platform having first and second opposing sides and forward and rearward ends which correspond to those of said base frame;

(c) two pairs of rigid support members of equal length, each support member having upper and lower ends, the upper ends of the first pair of support members being pivotally attached about fixed pivot points at spaced locations to one side of said platform and the lower ends of said first pair of support members being pivotally attached, about fixed pivot points at spaced locations to one side of said base, and the upper ends of the second pair of support members being pivotally attached about fixed pivot points at spaced locations to the second side of said platform and the lower ends of said second pair of support members being pivotally attached about fixed pivot points at spaced locations to the second side of said base, the distance between the points of attachment of said upper ends of a pair of support members being approximately equal to the distance between the points of attachment of said lower ends of said pair of support members, whereby at any point during upward motion of said platform relative to said base the said four points of attachment of each pair of support members forms a parallelogram with the base frame and platform; and

(d) means for pivoting said platform relative to said base comprising a pair of hydraulic cylinders connected to household water supply for hydraulic pressure and each having a first end pivotally connected to said base via a bar, the axis of rotation of said pivotal connection of said first end of said hydraulic cylinders being perpendicular to the length of said base and located closer to said rearward end of said base than said pivotal connections of said lower ends of said support members, and a second end pivotally connected to said platform via a sleeve, the axis

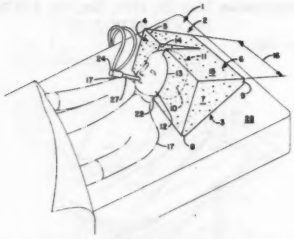
of rotation of said pivotal connection of said second end of said hydraulic cylinders being perpendicular to the length of said horizontal platform and located closer to said forward end of said platform than said pivotal connections of said upper ends of said support members.

5,007,122

HEAD RESTRAINT

Annette S. Daughdrill, 13228 Briargrove Ave., Baton Rouge, La. 70810

Filed Aug. 6, 1990, Ser. No. 563,049
Int. Cl.[5] A47G *9/00*
U.S. Cl. 5—434 **6 Claims**



1. A head restraint adapted to immobilize the head of a patient in a supine position, comprising a resilient block having an exterior surface and including:

a. a bottom;

b. an inclined front face having a top edge;

c. a rear face;

d. sidewalls;

e. a cavity in said front face forming an interior cavity wall dimensioned to contact a substantial portion of the top, rear and sides of a patient's head, while leaving the face of the patient exposed, the intersection of said cavity and said front face having a circumference less than the rear peripheral circumference of the head of a patient; and

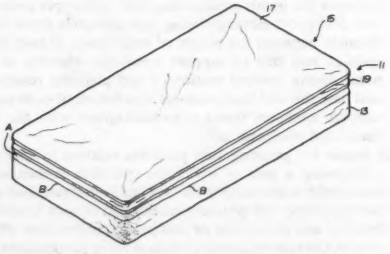
f. a split, opening between said cavity and said exterior surface, intersecting said rear face, said top edge and said front face above said cavity.

5,007,123

FLEXIBLE COVERING FOR REDUCING MOISTURE/VAPOR/BACTERIA TRANSMISSION

Donald M. Salyards, Winona, Minn., assignor to Comfortex, Inc., Winona, Minn.

Filed Jul. 5, 1990, Ser. No. 548,243
Int. Cl.[5] A47C *27/00*
U.S. Cl. 5—448 **20 Claims**



10. A sanitary and therapeutic mattress comprising:

a core;

an outer covering for forming a first moisture/vapor/bacteria barrier, the outer covering having a flexibility sufficient to reduce tissue pressures which cause the formation of body sores; and

an inner covering for forming a second moisture/vapor/bacteria barrier, the inner covering being positioned between the outer covering and the core of the mattress and having a flexibility substantially equal to the flexibility of the outer covering;

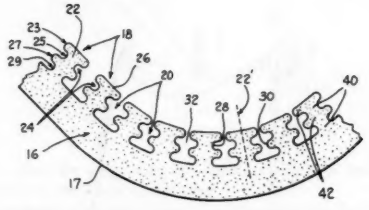
wherein the outer and inner coverings are made of materials selected such that moisture vapor transmission through both the outer and inner coverings is less than about 10.7 grams/hr/mz at a temperature of about 99 degrees F and a relative humidity of about 85%.

5,007,124

SUPPORT PAD WITH UNIFORM PATTERNED SURFACE

Richard W. Raburn, Mauldin, and Daniel J. Schaefer, Greenville, both of S.C., assignors to Span-America Medical Systems, Inc., Greenville, S.C.

Filed Nov. 4, 1988, Ser. No. 267,202
Int. Cl.[5] A47C *27/14*
U.S. Cl. 5—481 **12 Claims**



1. A mattress pad, comprising:

a generally rectangular base of resilient material, said base having a relative longitudinal axis, and a generally planar support surface on one side of said base adapted for resting on a mattress or the like; and

a plurality of elongated members formed of resilient material, and integrally associated with side base on a second side thereof opposite said one said thereof, said elongated members being situated parallel to one another and generally perpendicular to said base longitudinal axis, with predetermined constant longitudinal spacing between adjacent such members so as to form a uniform support surface with said second side;

wherein each of said elongated members have generally the same predetermined profile, viewed in a cross-sectional plane situated parallel to said base longitudinal axis and normal to said base second side, said profile having at least three distinct regions of different widths, whereby progressive collapse of said members responsive to a load received thereon results in varying resilient support characteristics presented to such load, so that relatively heavier loads are correspondingly provided relatively greater resilient support even though said pad has a uniform support surface on said second side thereof with said members all having predetermined constant spacing therebetween; and

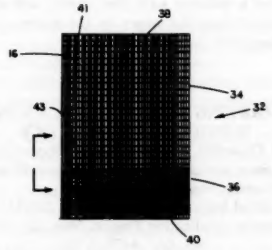
wherein said different width regions include at least one relatively smaller width region which is situated in said profile so as to have at least one relatively larger width region between itself and said base.

5,007,125

BLANKET HAVING IMPROVED THERMAL CHARACTERISTICS IN THE PORTION COVERING THE FEET

Daniel B. Owenby, Swannanoa, N.C., assignor to Beacon Manufacturing Company, Swannanoa, N.C.

Filed Dec. 26, 1989, Ser. No. 457,307
Int. Cl.[5] A47G 9/02
U.S. Cl. 5—486 6 Claims



1. A blanket comprising:

a rectangular panel constructed of woven yarn; said panel having an upper portion and a lower portion; said upper portion and said lower portion being woven together; said panel including a plurality of warp yarns and a plurality of filler yarns; said warp yarns running continuously through said upper portion and said lower portion; at least a part of said lower portion having more filler yarns per linear unit than said upper portion such that the thermal insulation characteristics of said part of said lower portion is substantially greater than the thermal insulation characteristics of said upper portion whereby the lower extremities of the user are enabled to be better insulated than other parts of the user's body; the parts of said filler yarns which pass over said warp yarns in said part of said lower portion form a weave which is more raised than the weave of said filler yarns which pass over said warp yarns in said upper portion.

5,007,126

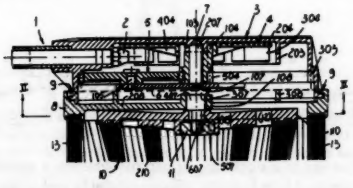
Patent Not Issued For This Number

5,007,127

HYDROBRUSH WITH SPEED-REDUCER OF THE EPICYCLIC TYPE

Bizzarri Paolo, Monte S. Pietro, Italy, assignor to Gordon S.n.C. di Bizzarri Paolo e C., Minerbio, Italy

Filed Oct. 11, 1989, Ser. No. 419,777
Claims priority, application Italy, Oct. 26, 1988, 15174 8/88
Int. Cl.[5] A46B 13/06
U.S. Cl. 15—29 3 Claims



1. A hydrobrush comprising:

an enclosed housing including (a) an outer body (3) having a top, a peripheral side depending from said top and having an inner crown gear (303), and an upper bushing (103) depending from and integrally formed with said top, and

(b) a collar (8) which is secured to said peripheral side of said body, said collar including a lower bushing (108) and spokes (208) which mount said lower bushing beneath said upper bushing;

a small Pelton turbine disposed in said enclosure, said turbine including a water jet means which is connectable to a pressure of a water main for producing a driving water jet and an impeller which is rotatable mounted about said upper bushing and disposed to be rotated by the water jet, said impeller including a hub (104) having an integral toothed wheel (504);

a shaft (7) including an upper end portion (207) which is rotatably mounted by said upper bushing, an intermediate portion (107) which extends through said hub of said impeller, a further portion (407) which is rotatably mounted by and which extends through said lower bushing, and a lower end portion (507–607);

a support (6) which is keyed to said intermediate portion of said shaft for rotation therewith;

a plurality of satellite gears mounted for rotation to said support and meshingly engaging both said toothed wheel of said hub and said inner crown gear of said outer body, said satellite gears having a diameter greater than that of said toothed wheel such that rotation of said impeller and toothed wheel thereof causes a lower rate of rotation with greater torque of said satellite gears, said support member and said shaft; and

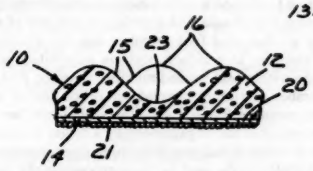
a cleaning brush which is attached to said lower end portion of said shaft for rotation therewith.

5,007,128

COMPOUNDING, GLAZING OR POLISHING PAD

Richard L. Englund, and Thomas W. Schwartz, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 298,508, Jan. 18, 1989, Pat. No. 4,962,562. This application Dec. 28, 1989, Ser. No. 458,411
Int. Cl.[5] B24B 29/00
U.S. Cl. 15—230.16 50 Claims



1. A paint finishing pad adapted to be used on a drive assembly including a back up pad having a generally planar support surface and a drive motor for moving the back up pad in a plane parallel to said support surface while using the finishing pad to apply glazing or compounding material to a painted surface and thereby remove imperfections along the polish and painted surface, said finishing pad comprising:

a layer of resiliently compressible open cell polymeric foam having a generally planar rear surface, said layer comprising a plurality of spaced projecting portions projecting a first distance at a right angle from said rear surface, and a plurality of recessed portions between said projecting portions and projecting a second distance at a right angle from said rear surface, which second distance is significantly less than said first distance, said projecting and recessed portions at least partially defining a front surface for said layer of foam opposite said rear surface, said open cell polymeric foam from which said layer is formed being a reticulated urethane foam; and

means attached to said rear surface adapted for releasably attaching said paint finishing pad tot he support surface of the drive unit;

said layer of foam being sufficiently resiliently compressible to allow the layer of foam to be pressed manually against the painted surface to compress the portions of the layer

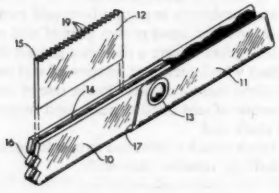
of foam toward the rear surface of the layer of foam and cause the parts of the front surface of the layer of foam defined by both the projecting portions and the recessed portions to generally conform to the painted surface and press the glazing or compounding material into engagement with the painted surface for efficient removal of imperfections, and subsequently to allow the phase of foam to be manually pressed against the painted surface with a lesser force only sufficient to compress parts of the projecting portions of the layer of foam to complete polishing of the painted surface.

5,007,129

GOLFER'S CLEANING TOOL

Melvin F. Hainey, 10609 Pinehurst Dr., Austin, Tex. 78747

Filed Jun. 12, 1989, Ser. No. 364,899
Int. Cl.[5] A63B *57/00*
U.S. Cl. 15—236.08 **2 Claims**



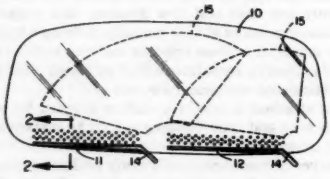
1. A golfer's tool comprising a first rectangular member formed longitudinally into a U-shaped holder having a first and second end and adapted to receive a scraping element, a scraping element mounted in said holder, said scraping element comprising an elongated blade having a plurality of teeth on one edge thereof extending between ends of said blade with one tooth closely adjacent one end of said blade, said one end of said blade being positioned closely adjacent said first end of said holder, a second rectangular member formed longitudinally into a U-shaped handle/shield, means pivotally mounting said second end of said first member in one end of said second member so that said first member can be pivoted into said second member to a closed position to position said edge of said blade within said second member with the first end of said first member extruding beyond the other end of said second member, means defining a gripping surface on the first end of said first member for engagement by a finger to pivot said first member from a closed position to an open position whereby said one tooth can be used to clean grooves in the face of a golf club and the plurality of teeth can be used for roughening the grip of a golf club.

5,007,130

WIPER CLEANING SYSTEM

John J. Jacoby, 1919 Paper Mill Rd., Huntingdon Valley, Pa. 19006

Continuation-in-part of Ser. No. 406,309, Sep. 12, 1989, Pat. No. 4,934,013. This application Feb. 26, 1990, Ser. No. 484,763
Int. Cl.[5] A47L *25/00*; B60J *1/20*; B60S *1/62*
U.S. Cl. 15—250 R **11 Claims**



1. A wiper cleaning system for removing debris and other foreign matter from a wiper for a surface such as a windshield serviced by a wiper, said system comprising a plurality of discrete raised elements projecting from said surface, said elements being arranged in horizontally extending rows that are vertically spaced, said rows extending for a distance corresponding to the length of the wiper, said elements being arranged in parallel horizontal alignment in each row and in generally vertical alignment in alternate rows and in staggered alignment in adjacent rows, said elements being spaced from each other by a distance such that debris and other foreign matter removed from the wiper by the system can be channeled therebetween.

5,007,131

BLADE CARRYING ASSEMBLY FOR A WINDSHIELD WIPER INCLUDING A LOCK

Jean-Claude Chevalier, Issoire, and Guy Raymond, Champeix, both of France, assignors to Valeo Systems d'Essuyage, Issy-Les-Moulineaux, France

Filed Mar. 16, 1989, Ser. No. 324,537
Claims priority, application France, Mar. 22, 1988, 88 03699
Int. Cl.[5] A47L *1/02*
U.S. Cl. 15—250.19 **10 Claims**

1. A blade carrying assembly for a windshield wiper, said assembly comprising:

a coupling head;

a wiper arm to carry at one end thereof a wiper blade and articulated at another end thereof to said coupling head about a pivot axis;

spring means biassing said wiper arm about said pivot axis relative to said coupling head in a direction to urge said one end of said wiper arm to a windshield wiping operative position; and

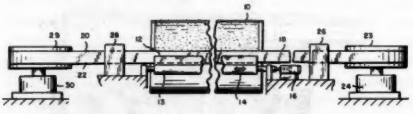
a lock member rotatably mounted on said wiper arm and having locking means for, upon rotation of said lock member to a locking position thereof, limiting the extent of rotation of said wiper arm about said pivot axis in said direction.

5,007,132

HYDRAULIC DRIVE FOR PULL THROUGH DOCTOR BLADE TRANSFER SYSTEM

Robert A. Reid, Charlton City, and Ronald F. Goodnow, Leicester, both of Mass., assignors to Thermo-Electron Web Systems, Inc., Auburn, Mass.

Filed Jun. 7, 1990, Ser. No. 534,686
Int. Cl.[5] B08B *1/02*
U.S. Cl. 15—256.53 **4 Claims**



1. For use in a doctoring apparatus wherein a coiled elongated doctor blade is payed off one rotatable reel while simultaneously being taken upon another rotatable reel, with an intermediate portion of the blade extending between said reels being supported by a blade holder arranged to apply said blade to a moving surface toe doctored, a hydraulic drive system for longitudinally shifting said blade across said surface and

through said blade holder from one to the other of said reels, said system comprising:

first and second hydraulic motors, each motor being drivingly connected to one of said reels, said motors being of the type which are powered by a pressurized flow of hydraulic fluid admitted thereto via a high pressure port and discharged therefrom via a low pressure port;

a reservoir containing a supply of hydraulic fluid;

pump means for withdrawing hydraulic fluid from said reservoir and for discharging a pressurized flow of said fluid;

low pressure conduit means communicating with the low pressure ports of said hydraulic motors to provide a fluid connection therebetween;

high pressure conduit means communicating with said reservoir, said pump means, and the high pressure ports of said hydraulic motors; and

control value means associated with said high pressure conduit means, said control valve means being adjustable between a first setting at which said pump means is connected to the high pressure port of said first hydraulic motor and the high pressure port of said second hydraulic motor is connected to said reservoir, and a second setting at which said pump means is connected to the high pressure port of said second hydraulic motor and the high pressure port of said first hydraulic motor is connected to said reservoir;

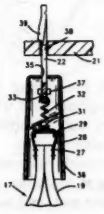
whereupon when said control valve means is adjusted to said first setting, said first reel is driven to take up said doctor blade thereon, with the doctor blade being simultaneously payed off said second reel, causing said second motor to pump the low pressure fluid discharge received from said first motor via said low pressure conduit means back to said reservoir, and when said control valve means is adjusted to said second setting, said second reel is driven to take up said doctor blade thereon, with said doctor blade being payed off said first reel and causing said first motor to pump the low pressure fluid discharge received from said second motor via said low pressure conduit means back to said reservoir.

5,007,133

CONVERTIBLE VACUUM CLEANER

John R. Lackner, North Ridgeville; Stanley E. Grzywna, Elyria; Ralph A. Weber, Richmond Heights, all of Ohio, and Thomas E. Baird, Springfield, Ill., assignors to The Scott Fetzer Company, Cleveland, Ohio

Filed Jun. 6, 1990, Ser. No. 534,192
Int. Cl.[5] A47L 9/14
U.S. Cl. 15—351 **5 Claims**



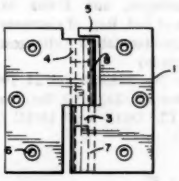
1. A vacuum cleaner comprising a power unit having structure defining a nozzle and an outlet and being operable to draw in dirt-laden air through said nozzle and to discharge said air through said outlet, an elongated dust bag connected at one end to said outlet, an elongated first handle, pivot apparatus for mounting said first handle on said power unit for movement between first and second positions, a connector mounted on the other end of said dust bag for movement between an extended position and a retracted position, said connector being releasably mounted to said handle at a fixed location spaced from said pivot apparatus and resilient means connected between said connector and said other end of said dust bag for resiliently urging said connector toward said retracted position, said resilient means operating to compensate for pivotal movement of said handle to maintain said bag extended in all positions of said handle.

5,007,134

REMOVABLE HINGE AT SPECIFIC ANGULAR ORIENTATION

Ferdinand G. Stanford, 826 Covey Hill Road, Hemmingford, Quebec, Canada H0L 1H0

Filed Sep. 2, 1986, Ser. No. 902,661
Claims priority, application Canada, Feb. 19, 1986, 502191
Int. Cl.[5] E05D 7/10
U.S. Cl. 16—266 **1 Claim**



1. A dual purpose hinge for an inwardly opening door comprising in combination:

a first hinge blade with a first sleeve;

a second hinge blade with a second sleeve aligned with said first sleeve;

a hinge pin fixed in said second sleeve of said second hinge blade and projecting therebelow into said first sleeve;

said first hinge blade including a projecting tongue at the top edge of said first hinge blade;

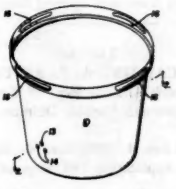
said second hinge blade including a slot at the top edge of said second sleeve arranged to permit said tongue on said first hinge blade to slide into said slot on said second sleeve allowing said second hinge blade to be disconnected from said first hinge blade only when said hinge blades are abutting.

5,007,135

PLANT GROWING RECEPTACLE

Robert Rigsby, 18671 Palm Creek Dr., Ft. Myers, Fla. 33917

Filed Jun. 18, 1990, Ser. No. 539,885
Int. Cl.[5] A01G 9/02, 27/00
U.S. Cl. 47—73 **6 Claims**



1. A plant growing receptacle having a plant positioned therein for further growth said receptacle comprising an open top and a side wall extending downwardly to a closed bottom wall, a first root exiting opening formed in said side wall at a distance above said bottom wall, drain openings formed in said side wall intermediate said root exiting opening and said closed bottom wall, a wall portion extending between said drain openings and said closed bottom wall having no openings therein and with said bottom wall being capable of retaining

water, a source of water for irrigating said plant in said receptacle, said source extending over the upper open end of said receptacle, a mixture of soil and fertilizer placed within said receptacle to promote further growth of the plant therein, said irrigating regulated as to allow feeding of water to the upper portion only of the receptacle and to the mixture of said soil and fertilizer therein, said water gravitating towards the bottom of said container and in its travel toward the bottom of the container some of the water, soil and fertilizer gravitating towards the bottom of the receptacle to there form a slurry of water, soil and fertilizer thereon, intermediate the said drain openings and bottom of said receptacle thus providing a moist environment within the receptacle.

5,007,136

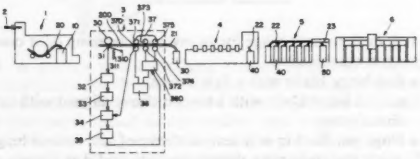
PROCESS FOR THE PRODUCTION OF A YARN FROM FIBER MATERIAL

Peter Artzt, Reutlingen, and Heinz Mueller, Metzingen-Neuhausen, both of Fed. Rep. of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Fed. Rep. of Germany

Continuation of Ser. No. 383,854, Jul. 21, 1989, abandoned. This application Jul. 24, 1990, Ser. No. 559,388

Int. Cl.[5] D01B *9/00;* **D01G** *12/00*

U.S. Cl. 19—65 A **15 Claims**



1. A process for producing yarn, comprising the following steps:

(a) supplying fiber to a card;

(b) carding said fiber to remove impurities therefrom and forming a card sliver from the carded fiber;

(c) analyzing a sample of said card sliver to determine fiber length distribution therein;

(d) combing said card sliver to remove a predetermined portion of said fibers in accordance with the results of the analysis conducted on said sample of said card sliver and producing a combed sliver;

(e) drawing said combed sliver to align the fibers in said combed sliver;

(f) opening said combed sliver to form opened fibers and to remove impurities therefrom;

(g) conveying said opened fibers to an open-end spinning device; and

(h) spinning yarn from said opened fibers.

5,007,137

CARDING APPARATUS

Horst Graute, Coesfeld, Fed. Rep. of Germany, assignor to Hergeth Hollingsworth GmbH, Dulmen, Fed. Rep. of Germany

Filed Jan. 4, 1990, Ser. No. 460,706

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1989, 3901313

Int. Cl.[5] D01G *25/00, 15/46*

U.S. Cl. 19—296 **29 Claims**

1. Carding apparatus for forming air laid fibrous webs, comprising:

means for feeding fibers;

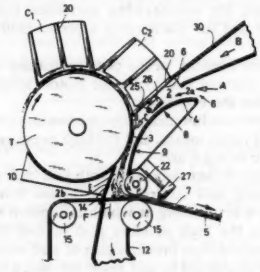
a driven main cylinder;

an air-permeable web conveying means receiving a web from said main cylinder;

an air passage substantially tangential to the main cylinder adjacent a fiber doffing zone and extending to said air-permeable web conveying means;

a suction means arranged beneath the web conveying means;

an air suction gap having a substantially nozzle-shaped cross section forming an upper portion of the air passage producing a laminar air stream;



said main cylinder exerting a centrifugal force, said centrifugal force throwing the fibers in the fiber doffing zone into said laminar air stream generated in said air passage and conveying said fibers to the web conveying means for deposit as a continuous fiber web; and

whereby carding apparatus especially suitable for manufacturing nonwovens is provided.

5,007,138

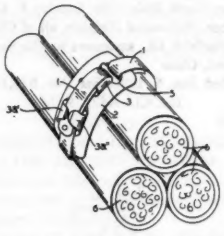
DEVICE FOR STRAPPING CABLES, PIPES OR OTHER SIMILAR ITEMS, TOGETHER OR TO SUPPORTS

David A. Pritchard, 3 Harvest Road, Englefield Green, Egham, Surrey, and Michael J. Donnelly, 137 Slough Road, Datchet, Berkshire, both of England

Continuation of Ser. No. 661,409, Oct. 16, 1984, abandoned. This application Aug. 25, 1986, Ser. No. 899,947

Int. Cl.[5] B65D *63/06*

U.S. Cl. 24—23 B **9 Claims**



1. A strapping device for joining cables, pipes or similar items together or to a support, and which may be assembled around such items easily and without the use of tools, said strapping device comprising

an elongate strip of bendable material having one end and an opposite end and so as to define an opposite end portion adjacent said opposite end, and substantially parallel longitudinal side edges,

a buckle plate attached to said one end of said strip, said buckle plate having an outer surface, and means mounted on said plate for receiving and holding said opposite end portion of said strip after the strip has been wrapped around the items to be joined, said strip receiving and holding means comprising

(a) a bridge portion extending transversely of said buckle plate at a location longitudinally spaced from said one end of said strip and defining a first longitudinal passageway, with said first passageway having a transverse

width greater than the width of said strip and being sized so as to be adapted to receive a portion of the strip therethrough, and

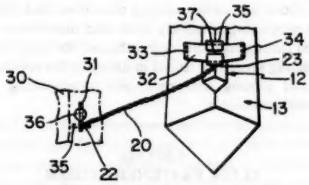
(b) a pair of transversely spaced apart ears extending outwardly from said outer surface of said plate at a location longitudinally spaced from said bridge portion and on the side of said bridge portion opposite said one end of said strip, said ears each having an outwardly extending base portion and a transversely extending outer end portion, with said base portions of said ears being transversely spaced apart a distance greater than the width of said strip so as to be adapted to receive a portion of the strip therebetween, and with said outer end portions extending generally parallel to said outer surface of said plate and so as to define a transverse gap between said outer end portions, and such that said ears collectively define a second longitudinal passageway which is in longitudinal alignment with said first passageway, and with said ears being configured and dimensioned so as to permit said opposite end portion of said strip to be longitudinally inserted through said second passageway and then through said first passageway, then bent over said bridge portion so as to provide a superposed end portion which is positioned over the portion of the strip passing through said second passageway, and then passing the superposed end portion of the strip through said gap and into said second passageway by tilting said superposed end portion and transversely inserting one of said side edges thereof sideways through said gap and beneath one of said ears until the other of said side edges thereof has passed through said gap and into said second passageway, and then pushing said superposed end portion transversely in the opposite direction until the other of said side edges is positioned under the other of said ears, and so that the superposed end portion is secured within said second passageway.

5,007,139

NECKTIE RETAINER

Mark E. Ahern, 1278 Southwest Highpoint La., Palm City, Fla. 34990

Continuation-in-part of Ser. No. 404,180, Sep. 7, 1989, abandoned. This application Jul. 10, 1990, Ser. No. 550,204
Int. Cl.[5] A41D *25/10*
U.S. Cl. 24—49 R **4 Claims**



1. A necktie retainer in combination with a necktie and the garment of the wearer, said necktie when being worn having a large end portion with front and rear sides that lies essentially flat against said garment, said large end portion having a cross member positioned in transverse relationship to the long dimension and on said rear side thereof, said cross member having length, height and thickness dimensions and further having the portions thereof at the ends of said length dimension attached to said large end portion, comprising in combination;

a tensor member having a movement establishing length between first and second ends,

means retaining said first end of said tensor member to the garment of the wearer,

a detachable member attached to said second end of said tensor member,

said detachable member having an essentially "C" shape,

the opening of said "C" shape being a transverse slot of the order of said thickness dimension of said cross member, and

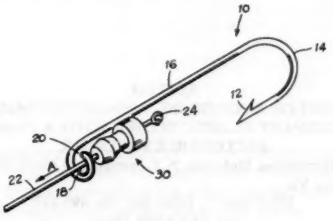
the top to bottom internal dimension of said "C" shape being of the order of said height dimension of said cross member such that said detachable member grips said cross member.

5,007,140

SNAP-ON FASTENER

Charles D. Brookey, 11291 E. Broadway, Tucson, Ariz. 85748

Filed Feb. 26, 1990, Ser. No. 484,906
Int. Cl.[5] F16G *11/00*; A01K *91/04*
U.S. Cl. 24—129 R **8 Claims**



1. A fastener for an eye and line combination, comprising:

(a) an eye, wherein an opening in the rim constituting said eye is provided for inserting said line into said eye; and

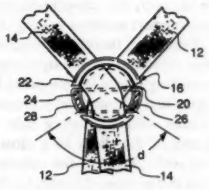
(b) a stopper of size suitable for mechanical coupling and cooperation with said eye, said stopper having a hole capable of receiving said line and of preventing a knot tied on it from sliding through it, having a groove for receiving and holding in place the inside perimeter of said eye, and further having a stop to prevent said stopper from sliding out of said eye when a pulling force is applied to said line, said stop consisting of an enlarged end portion of said stopper.

5,007,141

STRAP RETAINER FOR HEAD GEAR

James J. Gentes, Soquel, Calif., assignor to Giro Sport Design, Soquel, Calif.

Filed Jun. 30, 1989, Ser. No. 373,417
Int. Cl.[5] A44B *11/00*; A42B *7/00*
U.S. Cl. 24—163 R **21 Claims**



1. A strap retainer, comprising:

a first generally planar configured member;

a second generally planar configured member disposed in spaced-apart relationship to said first member;

a first post connecting one side of said first member to a corresponding side of said second member;

a second post disposed in spaced-apart relationship to said first post and connecting another side of said first member to another corresponding side of said second member; and

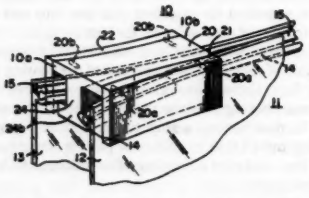
resilient band means disposed about said posts and cooperating with said first and second members and said first and second posts to form a pair of passageways, one on each side of said band means, through which each strap of a pair of straps may be respectively passed, whereby independently pulling on one of said straps results in said strap being freely pulled through its respective passageway, but simultaneously pulling on both of said straps results in said straps combining to engage and stretch said band means causing said band means to resist displacement of said straps and causing said straps and said band means to bind against said first and second members so as to further resist displacement of said straps.

5,007,142

METHOD OF ASSEMBLING A SNAPPED-TOGETHER MULTIPART PLASTIC SLIDER WITH A PLASTIC RECLOSABLE FASTENER

Fox J. Herrington, Holcomb, N.Y., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Mar. 7, 1990, Ser. No. 490,107
Int. Cl.[5] A44B *19/16*
U.S. Cl. 24—400 **12 Claims**



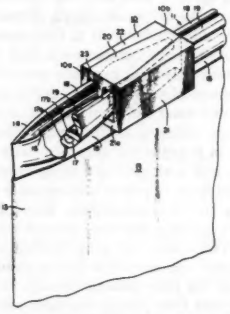
10. A multipart plastic slider for straddling relation with a profiled plastic reclosable fastener particularly suited for thermoplastic bags and the like formed by a pair of flexible plastic sheets having a top edge with separable fastener means extending along the length thereof comprising reclosable interlocking rib and groove profile elements on the respective sheets, the straddling slider for closing or opening the reclosable fastener elements comprising a wedge-shaped separator finger and interlocking complimentary structure formed from plastic for moving along the fastener, the complimentary structure comprising a transverse support member having the wedge-shaped separator finger depending therefrom, said support member having interlocking structure on the opposite sides thereof, a pair of spaced depending side walls supported on said support member for engaging and automatically interlocking with said interlocking structure, said depending side walls extending from an opening end of the slider to a closing end, the side walls being spaced wider apart at the opening end to permit separation of the rib and groove elements by the wedge-shaped separator finger extending between the side walls at the opening end, the side walls being space sufficiently close together at the closing end to press the rib and groove elements into interlocking relationship as the slider is moved in a fastener closing direction, at least one of said separator finger and said side walls having shoulder structure on the bottom thereof for cooperating with the bottom of the fastener to prevent the slider from being lifted off the top edge of the fastener while the slider straddles the fastener.

5,007,143

ROLLING ACTION ZIPPER PROFILE AND SLIPPER THEREFOR

Fox J. Herrington, Holcomb, N.Y., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Mar. 7, 1990, Ser. No. 490,110
Int. Cl.[5] A44B *19/16*
U.S. Cl. 24—400 **11 Claims**



1. A plastic reclosable fastener with slider particularly suited for thermoplastic bags and the like comprising a pair of flexible plastic strips having separable fastener means extending along the length thereof comprising reclosable interlocking male and female profile elements on the respective strips, said strips including profiled tracks extending along the length thereof parallel to the male and female elements, said male and female elements having complimentary cross sectional shapes such that they are closed by pressing the bottom of the elements together first and then rolling the elements to a closed position toward the top thereof, a straddling slider on said tracks for closing or opening the reclosable fastener elements comprising an inverted U-shaped plastic member having a back for moving along the top edges of said tracks with side walls depending therefrom for cooperating with said tracks and extending from an opening end of the slider to a closing end, said side walls having a greater spacing at the opening end than the closing end, a separator finger depending from said back between said side walls and inserted between said tracks, said separator finger being shaped throughout the length thereof for first holding the top of the male and female elements open while the slider first presses the bottom of the elements together and then permitting the slider to press the top of the elements together while the slider moves in a closing direction, said slider having shoulders projecting inwardly from said depending side walls and shaped throughout the length thereof for cooperation with said depending separator finger in creating the rolling action in opening and closing said reclosable interlocking male and female profile elements.

5,007,144

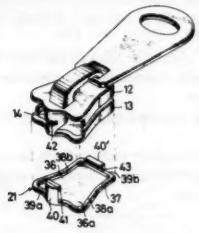
SLIDE FASTENER SLIDER

Yasuharu Terada, Uozu, and Susumu Ishii, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Apr. 2, 1990, Ser. No. 502,733
Claims priority, application Japan, Mar. 31, 1989, 1-38538; Apr. 17, 1989, 1-44771
Int. Cl.[5] A44B *19/26*
U.S. Cl. 24—415 **7 Claims**

6. A slide fastener slider comprising a slider body including an upper wing and a lower wing jointed together at their one ends by a connecting neck and having respective inwardly directed lateral flanges, and a thermal insulating backing substantially coextensive with and secured to said lower wing, said backing having a hook at one end engageable in a recess formed in said neck and a hook at the opposite end engageable

in a recess formed in a rear end of said upper wing, said backing having a web surrounded by a continuous inwardly directed peripheral flange, and said web defining with the outer surface of said lower wing an air accommodating pocket.



5,007,145

END-LOCKING DEVICE FOR SLIDE FASTENERS

Sam H. Kim, 43-3, Myungju-dong, Kangneung-si, Kangwon-do, 210-30, Rep. of Korea

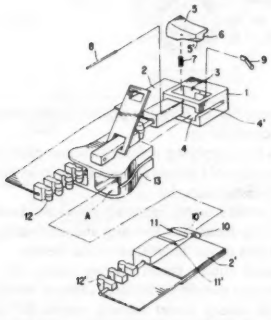
PCT No. PCT/KR89/00001, § 371 Date Sep. 18, 1989, § 102(e) Date Sep. 18, 1989, PCT Pub. No. WO89/06504, PCT Pub. Date Jul. 27, 1989

PCT Filed Jan. 18, 1989, Ser. No. 411,451

Claims priority, application Rep. of Korea, Jan. 18, 1988, 1988-348

Int. Cl.[5] A44B *19/38*

U.S. Cl. 24—433 **18 Claims**



1. An end-locking device for slide fasteners comprising;

a socket terminal disposed at one end of a first row of zipper teeth and adapted to receive one end of a second row of zipper teeth through its mouth, said socket terminal including locking means provided with a recessed portion for interlocking engagement and mounted to pivot on said socket terminal in an opening formed therein; and

engaging means having a recessed portion for being brought into interlocking engagement with said locking means and located at the end of the second row of zipper teeth,

wherein said recessed portion of said locking means engages with said recessed portion of said engaging means to releasably lock the end of the second row of zipper teeth in said socket terminal when the end of the second row of zipper teeth is fully seated within said socket terminal, and the interlocking engagement between said portions is released when said locking means is caused to pivot.

5,007,146

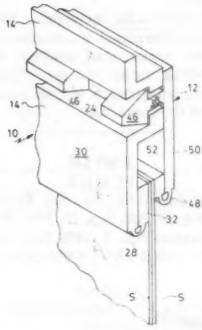
PLASTIC PROFILE FASTENER

Daniel Meidan, 90 Elise Terrace, North York, Ontario, Canada M2R 2X1

Filed May 10, 1990, Ser. No. 521,493

Int. Cl.[5] A44B *21/00;* **B65D** *33/14*

U.S. Cl. 24—683 **14 Claims**



1. In a plastic profile fastener of the type comprising a female member having an axially elongated groove profile and a male member having a complimentary axially elongated male projection for engagement within said groove profile;

the improvement wherein said groove profile is provided with a plurality of male fastener elements and wherein said male projection is provided with a plurality of female fastener elements for engagement with said male elements when said male projection is engaged in said groove profile, said male and female fastener elements each presenting a cooperating surface component transverse to the axis of said fastener serving to limit the relative axial movement of said members.

5,007,147

CONTROL SYSTEM FOR STEPLESSLY VARIABLE POWER TRANSMISSION

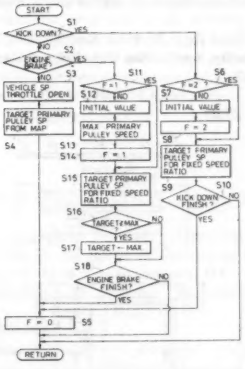
Shoji Imai, and Yoshimi Kanemoto, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 302,198, Jan. 27, 1989, abandoned. This application May 22, 1990, Ser. No. 527,711

Claims priority, application Japan, Jan. 29, 1988, 63-18910

Int. Cl.[5] B60K *41/18*

U.S. Cl. 74—866 **8 Claims**



1. A steplessly variable power transmission comprising:

a steplessly variable transmission mechanism in which a

speed ratio between an input shaft and an output shaft provided in the transmission is steplessly changed,

speed ratio control means for controlling the speed ratio in accordance with an engine operating condition,

load change detecting means for detecting a rate of change in an engine load when an engine load zone to which a value of the engine load belongs is changed from an intermediate zone to a specific zone other than the intermediate zone, and

speed ratio hold means for maintaining the speed ratio at a constant value determined in accordance with the rate of change in the engine load obtained through the load change detecting means and providing the speed ratio control means with control signals determining the constant value of the speed ratio.

5,007,148

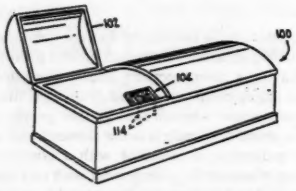
PLAQUE

Sam Bida, 2160 Crawford St., Ely, Nev. 89301

Division of Ser. No. 100,356, Sep. 23, 1987, Pat. No. 4,883,554. This application Nov. 8, 1988, Ser. No. 268,507

Int. Cl.[5] A61G *17/04*; G09F *3/10, 19/00*

U.S. Cl. 27—1 **12 Claims**



1. A plaque comprising a base, a thin sheet of metal foil mounted on said base, said sheet having an upper viewing surface with information inscribed therein in the form of indentations in said viewing surface, said indentations extending inwardly of and below said viewing surface, material having a high degree of visibility disposed in said indentations so that the information may be readily perceived by the human eye, a layer of transparent protective material disposed over said sheet and in contact with said viewing surface, and a layer of fixative interposed between said material having a high degree of visibility and said layer of protective material.

5,007,149

METHOD FOR MANUFACTURING A SOLID ELECTROLYTE CAPACITOR IN A CHIP STRUCTURE

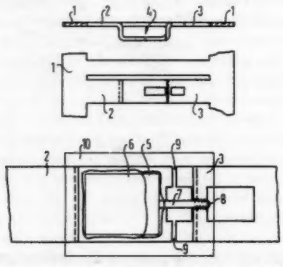
Werner Schnabel, Nattheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 30, 1990, Ser. No. 574,796

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1989, 3931263

Int. Cl.[5] H01G *4/00*

U.S. Cl. 29—25.03 **4 Claims**



1. A method of manufacturing a solid electrolyte capacitor including a capacitor chip and a carrier band, the chip comprising a cathode plate and an anode wire and the carrier band comprising an anode section as an anode terminal, a cathode section as a cathode terminal and an intermediate recess section connected between the anode and cathode sections, comprising the steps of:

(a) placing the capacitor chip in the recess section, and

(a1) electrically connecting the cathode plate to the cathode section;

(b) electrically connecting the anode wire to the anode section; and

(c) separating the anode section from the cathode section by cutting the carrier band between the anode section and the cathode section.

5,007,150

APPARATUS FOR THE APPLICATION OF A GASKET INSIDE CLOSURES COMPRISING A CUP, SUCH AS SCREW-ON AND CROWN CAPS

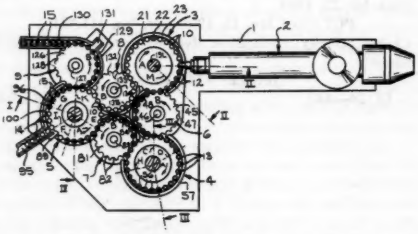
Rodiero Alieri, Imola, Italy, and Paul L. Thomason, Largo, Fla., assignors to Tredegar Molded Products Company, Richmond, Va.

Continuation of Ser. No. 488,402, Feb. 28, 1990, which is a continuation of Ser. No. 192,656, May 11, 1988, abandoned, which is a continuation of Ser. No. 860,58, May 7, 1986, abandoned. This application Jul. 20, 1990, Ser. No. 555,104

Claims priority, application Italy, Jun. 24, 1985, 3474 A/85

Int. Cl.[5] B29C *1/04*

U.S. Cl. 29—33 J **14 Claims**



1. An apparatus for forming plastic liners and placing them in closures comprising:

(a) means for supplying softened thermoplastic material;

(b) individual mold means for receiving individual batches of thermoplastic material;

(c) a first rotary turret carrying the individual mold means and having means for forming and depositing the individual batches in the individual mold means;

(d) a second rotary turret having means for pressing the batches into plastic cylindrical closure liners;

(e) a third rotary turret having means for removing the closure liners from the individual mold means and for placing the closure liners into closures carried by the third rotary turret;

(f) means for transferring the individual mold means between the first, second, and third rotary turrets.

5,007,151

MACHINE TOOL TURRET

Nagle V. Gusching, Sidney, Ohio, assignor to The Monarch Machine Tool Company, Sidney, Ohio

Continuation-in-part of Ser. No. 263,041, Oct. 26, 1988, Pat. No. 4,856,153. This application Aug. 3, 1989, Ser. No. 389,268

Int. Cl.[5] B23B *7/04, 39/20*

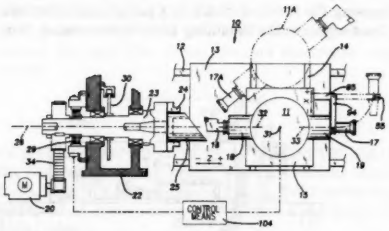
U.S. Cl. 29—33 J **5 Claims**

1. A machine tool turret for a machine tool having a rotatable workpiece spindle rotatable about a c axis, comprising in combination:

first and second tool spindles journaled on said turret for rotation about first and second tool axes, respectively;

means mounting said turret for compound movement of said tool spindles in an x-c plane defined by an x axis perpendicular to said c axis;

means to lock each said tool spindle against rotation for machining of a rotating workpiece by a non-rotating tool



in each said tool spindle, and for machining of a rotating or non-rotating workpiece by a rotating tool in each said tool spindle when unlocked and rotated; and

including drive means to rotate selectively each of said tool spindles;

said drive means being a single motor connectable to rotate alternatively each of said tool spindles.

5,007,152

VARIABLE-CROWN ROLL

Atsushi Tomizawa; Susumu Inoue, both of Kobe, and Takeshi Masui, Nishinomiya, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

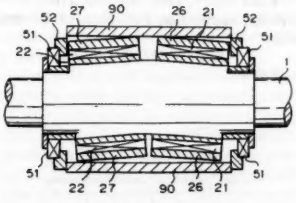
Filed Nov. 9, 1989, Ser. No. 435,210

Claims priority, application Japan, Oct. 27, 1989, 1-280709

The portion of the term of this patent subsequent to Aug. 29, 2006, has been disclaimed.

Int. Cl.[5] B21B *13/02*

U.S. Cl. 29—116.2 **32 Claims**



1. A variable-crown roll comprising:

a curved arbor; and

a plurality of antifriction bearings which are mounted on said arbor, said bearings being symmetrically disposed with respect to the lengthwise center of said arbor, said bearings on one side of the lengthwise center of said arbor being symmetric with respect to said bearings on the other side of the lengthwise center.

5,007,153

METHOD FOR TIGHTENING THREADED CONNECTORS

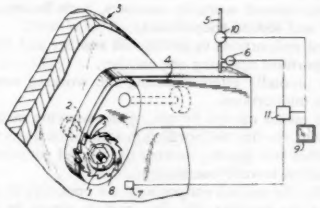
John K. Junkers, 7 Arrowhead La., Saddle River, N.J. 07458

Filed Jun. 29, 1989, Ser. No. 374,915

Int. Cl.[5] B23Q *17/20*

U.S. Cl. 29—407 **7 Claims**

1. A method of tightening a threaded connector including a bolt and a nut, comprising the steps of turning a nut on a bolt; continuously monitoring a relationship between a pressure applied for turning the nut and an angular distance of the turning of the nut; based on said monitored relationship between the pressure applied for the turning of the nut and the angular distance of the turning of the nut, determining a position of the nut when an elongation of the bolt starts; and thereafter turning the nut only over such an additional angular distance from the determined position, that a desired elongation of the bolt located below a yield point of the bolt is achieved.



5,007,154

METHOD OF ASSEMBLING A VEHICULAR DRIVING SHAFT

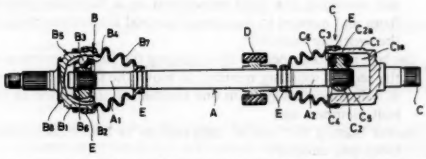
Yoshiharu Kamata; Nobuyoshi Nagatsuma; Mituharu Ozawa, and Hiroshi Yoshioka, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1989, Ser. No. 323,742

Claims priority, application Japan, Mar. 17, 1988, 63-63838; Mar. 18, 1988, 63-65536

Int. Cl.[5] B21D *39/03*

U.S. Cl. 29—430 **3 Claims**



1. A method of assembling a vehicular driving shaft in which a joint unit is attached to each of both ends of the driving shaft, said method comprising the steps of:

orienting the driving shaft vertically with respect to the ground;

conveying the driving shaft to a plurality of assembling stations while holding said driving shaft in a vertical posture in which an axial line of the driving shaft extends vertically with respect to the ground; and

assembling component parts of the joint units to the driving shaft, each of said component parts being assembled to the driving shaft at each of the stations while the driving shaft is held in said vertical posture.

5,007,155

LATCH PIN INSTALLATION APPARATUS AND METHOD

John J. Jordan, Freehold Township, Monmouth County, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1990, Ser. No. 516,575

Int. Cl.[5] B23P *11/00*

U.S. Cl. 29—434 **2 Claims**

1. In apparatus for installing a pivot pin member in a latch in a shipping container having a cover portion and a base portion and a keeper member on one of the cover and base portions, the latch having

securing means for engaging the keeper member to hold the cover and base portions together,

lock means for tightening the securing means, and

aperture means in the securing means and the lock means for receiving the pivot pin member,

the improvement comprising

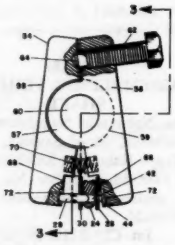
first and second working members, each having opposite first and second endportions,

the first endportions opposing one another and the second endportions opposing one another,

means pivotally interconnecting the working members at their midportions,

motive means carried by one of the working members for moving the first endportions in a direction away from one another and thereby moving the second endportions in a direction toward one another,

whereby the second endportions are operative to press the pivot pin member into the aperture means in the latch members,



the motive means including a bolt member threadedly received in the first endportion of the first working member and mounted for axial movement in a direction spaced from and normal to the axis of pivotal interconnection of the working members,

the bolt member operatively engaging the first endportion of the second working member to move the first endportions in a direction away from one another upon rotation of the bolt member, and

means biasing the second endportions in a direction away from one another,

the second endportions including opposing faces and means defining opposing cavities in the opposing faces for receiving opposite ends of the pivot pin member,

the cavities having open end portions transverse to the opposing faces and being arranged in opposing pairs in the opposing faces.

5,007,156

METHOD OF SELECTIVELY CONNECTING A SET OF WINDING MEANS FOR A DYNAMOELECTRIC MACHINE INTO AT LEAST TWO DIFFERENT ELECTRICAL CONFIGURATIONS

Jerome P. Hurtgen, Ft. Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 213,720, Jun. 30, 1988, Pat. No. 4,880,391. This application Jul. 19, 1989, Ser. No. 381,854

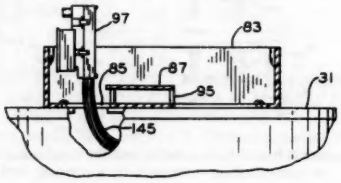
Int. Cl.[5] H02K *15/00*

U.S. Cl. 29—596 **19 Claims**

11. A method of selectively connecting a set of winding means for a dynamoelectric machine into at least two different electrical configurations with the winding means being adapted for excitation upon the energization of the dynamoelectric machine, the dynamoelectric machine including means for housing at least the winding means and having at least one opening therein, a conduit box associated with the housing means and having at least one aperture disposed so as to communicate with the at least one opening, each winding means having a plurality of leads adpated to be connected to each other and to a power source in the at least two different electrical configurations and with the leads passing through the at least one opening and the at least one aperture in part into the conduit box, a mounting table in the conduit box and having an abutment surface thereon, a terminal block having a plurality of connection apertures therein, and a plurality of lead terminations, the method comprising the steps of:

connecting the lead terminations to the leads of the winding means passed into the conduit box, repsectively;

disposing the terminal block in a preselected orientation at least adjacent the mounting table in the conduit box;



releasably inserting each lead termination into a predetermined one of the connection apertures in the terminal block while maintaing the terminal block at least generally in the preselected orientation thereof;

moving the terminal block from the preselected orientation thereof into another preselected orientation in overlaying engagement with the abutment surface of the mounting table; and

releasably engaging the terminal block in its another preselected orientation to the mounting table at least upon the occurrence of the moving step.

5,007,157

MACHINE TOOL

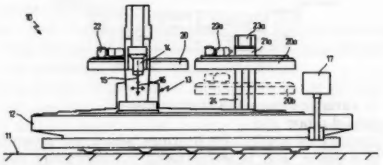
Hans-Henning Winkler, Tuttlingen, and Eugen Rütschle, Mühleim, both of Fed. Rep. of Germany, assignors to Chiron-Werke GmbH & Co. KG, Tuttlingen, Fed. Rep. of Germany

Filed Sep. 6, 1990, Ser. No. 578,875

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1989, 3930071

Int. Cl.[5] B23Q *3/157*

U.S. Cl. 29—568 **5 Claims**



1. A machine tool comprising:

a stationary machine bed;

a support;

means for displacing said support relative to said machine bed within a predetermined operating area;

a spindle stock arranged on said support for being displaced therewith, said spindle stock having a first receptacle for receiving a detachable toolholder magazine therein, said first receptacle being provided with first transfer means for transferring said toolholder magazine and being provided with first connector means for feeding energy to said toolholder magazine;

a stationary rack arranged within said operating area, said rack having a plurality of second receptacles, said second receptacles being each provided with second transfer means for transferring a toolholder magazine and being

each provided with second connector means for feeding energy to said toolholder magazine;

a plurality of toolholder magazines, each having transfer elements for being transferred between said first receptacle on said spindle stock and one of said second receptacles on said rack, said toolholder magazines having each individual drive means for transporting toolholders within said toolholder magazine, said drive means being linked to third connectors mating said first or said second connector, respectively, when said toolholder magazine is inserted into said first or said second receptacle, respectively.

5,007,158

METHOD OF MANUFACTURING MAGNETIC HEADS

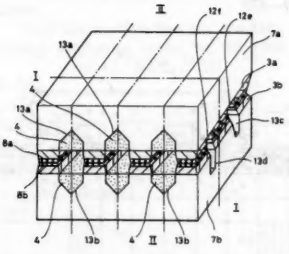
Kazuo Ino, Matsubara; Yoshiaki Shimizu, Minoh; Hiroyuki Okuda, Daitoh; Kousou Ishihara, Daitoh, and Takashi Ogura, Daitoh, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 8, 1989, Ser. No. 307,654

Claims priority, application Japan, Feb. 9, 1988, 63-28091; May 31, 1988, 63-133608; Jul. 27, 1988, 63-187727

Int. Cl.[5] G11B *5/42*

U.S. Cl. 29—603 **16 Claims**



1. A method of manufacturing a magnetic head having a magnetic gap between a pair of magnetic core halves abutted with each other through a nonmagnetic material, said method comprising the steps of:

preparing first and second magnetic core half members of ferromagnetic oxide having gap forming surfaces to be abutted with each other for defining said magnetic gap;

selectively forming a ferromagnetic thin film of a ferromagnetic metal material on said gap forming surface of at least said second magnetic core half member, said ferromagnetic thin film being so formed as (a) to expose a portion to be provided with a track width regulating groove and at least one of a coil groove and a joining member receiving groove in said gap forming surface of said first magnetic core half member and (b) to expose, in said gap forming surface of said second magnetic core half member, a portion to be provided with a track width regulating groove and a portion to be opposite to said at least one of said coil groove and said joining member receiving groove to be provided on said gap forming surface of said first magnetic core half member;

performing mechanical working on said exposed portion of said gap forming surfaces therein to provide said track width regulating groove and said at least one of said coil groove and said joining member receiving groove in said first magnetic core half member and to provide said track width regulating groove in said second magnetic core half member; and

abutting said first and second magnetic core half members between said gap forming surfaces to join the same with each other.

5,007,159

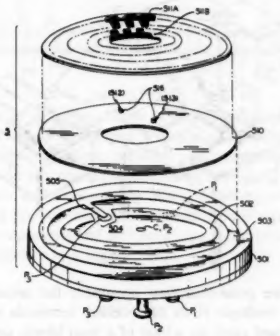
METHOD OF MANUFACTURING AN ELECTRICAL COMPONENT, E.G. A DIGITAL CONTACTING ENCODER

Kenneth Brown, Evansville, Ind., and Richard E. Riley, Riverside, Calif., assignors to Hamilton Standard Controls, Inc., Farmington, Conn.

Filed Mar. 29, 1989, Ser. No. 329,737

Int. Cl.[5] H01H *11/00*

U.S. Cl. 29—622 **7 Claims**



1. A method of manufacturing an electrical component which component includes

a rigid base having an exterior side and an interior side;

at least two, externally exposed electrical contacts on the exterior side of said base, one of them being a common contact and the other being a strip contact;

an electrical signal varying element, including

a relatively rigid substrate having a top side and an underside, and

at least one, longitudinally extended strip of signal affecting, conductive material located on the top side of said substrate;

a movable, bridging member electrically connected to said common contact and associated with said strip, movably sweeping along said strip causing an electrical signal imposed across said common contact and said strip contact to vary due to the changing relative position of said bridging member with respect to the length of said longitudinally extended strip;

comprising the steps of:

(a) forming a longitudinally extended, affixed conductive layer on the interior side of said base in physical and electrical connection with said strip contact, with said conductive layer providing a serial link in said conductive path, the presence of said conductive layer allowing greater tolerance in positioning said strip in relation to said strip contact;

(b) interfacing said conductive layer to the underside of said substrate, with the conductive layer located between said substrate and said base substantially coincident in alignment with said longitudinally extended strip, so that said conductive layer is electrically connected with said strip and said strip contact, and so that there is only one conductive path from said external strip contact to said strip within the component, the presence of said conductive layer allowing relatively great latitude in the alignment and placement of said strip with respect to said external strip contact; and

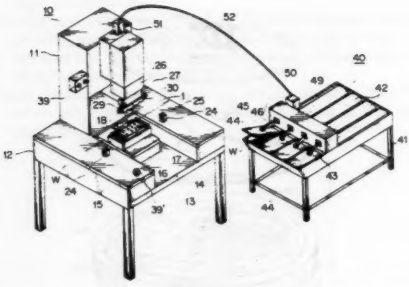
(c) joining said substrate and said base together and using said conductive layer so that said conductive layer provides a serial link in the only conductive path from said external strip contact to said strip.

5,007,160

APPARATUS FOR PRESS-INSTALLING WIRES

Masahiko Ishida, Kosai; Nobuaki Yamakawa, and Masahiro Shiida, both of Shizouka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 12, 1989, Ser. No. 378,673
Claims priority, application Japan, Jul. 14, 1988, 63-173693
Int. Cl.[5] H01R *43/04*
U.S. Cl. 29—753 **1 Claim**



1. A wire press-installing apparatus for securely seating wires into multiple rows of receiver terminals erected at a predetermined pitch on a base of a joint block, comprising:

a receiver block means for securely holding the joint block thereon;

a table means on which the receiver block means is mounted and means for intermittently moving the receiver block means by a distance equal to the pitch of the receiver terminals on the joint block;

a ram means disposed above the table means and opposite the receiver block means for vertically moving a wire press-installing blade toward and away from the receiver block;

wire axis aligning jig means mounted on the table for temporarily holding the wire such that the wire faces a row of receiver terminals arranged on the base of the joint block;

a plurality of containers, each having a cover and containing specifically rated wires therein; and

a means for selecting one of the plurality of containers as having the next wire to be installed in the receiver terminals, said cover being openable in response to a signal from the selecting means and in response to the ram means having moved the distance equal to the pitch of the receiver terminals on the joint block.

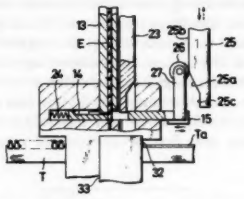
5,007,161

APPARATUS FOR FEEDING AND TRANSFERRING DISCRETE COUPLING ELEMENTS

Yasuhiko Matsuda, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Continuation of Ser. No. 480,893, Feb. 16, 1990, abandoned. This application Jul. 23, 1990, Ser. No. 559,405
Claims priority, application Japan, Feb. 21, 1989, 1-18398[U]
Int. Cl.[5] A41H *37/06*
U.S. Cl. 29—769 **6 Claims**

1. An apparatus for feeding and transferring discrete coupling elements each having a head portion and a pair of bifurcated leg portions successively one at a time onto a stringer tape, which apparatus comprises a feed unit including a vertically disposed feed chute having an elongate vertical opening, a transfer unit including a first slide and a second slide both supported on a base for horizontal reciprocating movement and defining therebetween a pocket registrable with said vertical opening, a transfer chute integral with said base and having a vertical opening for receiving an element from said pocket and transferring the same onto said tape, and means connected



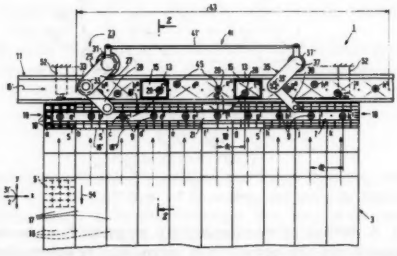
to said second slide and adapted to effect horizontal reciprocating movement of said slides.

5,007,162

METHOD AND DEVICE FOR PLACING COMPONENTS ON A SUPPORT

Adrianus A. R. Weeber, Alkmaar, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 3, 1990, Ser. No. 460,460
Claims priority, application Netherlands, Jan. 6, 1989, 8900027
Int. Cl.[5] H05K *3/30*; B23P *19/00*
U.S. Cl. 29—839 **14 Claims**



1. A method of placing components on a support, in which within a placement cycle a number of components are picked up from a presentation position in which the components are in a first array of a given spacing in a given direction by means of a pick-up device comprising a number of pick-up elements in a second array in a second spacing in the given direction, after which the pick-up device is moved above the support and all the pick-up elements are positioned one by one above the desired position on the support by the relative movement of the pick-up device with respect to the support and the relevant component is placed in this position in a third spacing of a third array, characterized in supplying the components positioned in said first array in tray packings, picking up the components one by one from the different tray packings to place them in the second array and then placing the components one by one on the support in said third array wherein the spacings of the first, second and third arrays differ.

5,007,163

NON-DESTRUCTURE METHOD OF PERFORMING ELECTRICAL BURN-IN TESTING OF SEMICONDUCTOR CHIPS

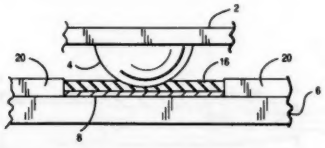
Keith R. Pope, and Gustav Schrottke, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1990, Ser. No. 510,497
Int. Cl.[5] H05K *3/34*
U.S. Cl. 29—840 **6 Claims**

1. A method of temporarily bonding electronic chips to

metallized pads on a circuitized substrate comprising the steps of:

choosing a first metal indium and a second metal gallium as a pair of metals for spontaneously forming a eutectic molten mixture at a temperature in the range of from about 10 deg. C. to about 30 deg. C.;



providing a solder dam at each substrate pad;

depositing a first of said pair of metals on substrate pads;

depositing a second of said pair of metals over chip terminal bumps; and

bringing chip terminal bumps and metallized pads into contact.

5,007,164

METHOD AND APPARATUS FOR PRODUCING LINEAR BODY WITH WATERPROOF PLUG

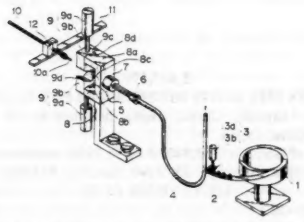
Sanae Kato, Gotenba, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Sep. 8, 1989, Ser. No. 404,534

Claims priority, application Japan, Sep. 12, 1988, 63-226394

Int. Cl.[5] B23P *19/00*

U.S. Cl. 29—854 **19 Claims**



1. A method for mounting a waterproof plug to the front end of a covered electric wire, comprising the steps of:

feeding waterproof plugs to a first position of a transfer path one by one from a magazine in such a manner that the opening of each waterproof plug is maintained parallel with said transfer path as each waterproof plug is fed to said first position;

feeding a covered electric wire to a mounting position at a second position of said transfer path in an uncovered state of the front end thereof; and

transferring the waterproof plug from the first position to the second position and inserting the uncovered end of the electric wire into the opening of the waterproof plug.

5,007,165

METHOD OF PRODUCING A CAM SHAFT

Miroslan Podhorsky, Elisabethstrasse, Fed. Rep. of Germany, assignor to Balckeürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed Aug. 30, 1990, Ser. No. 575,306

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1989, 3929179

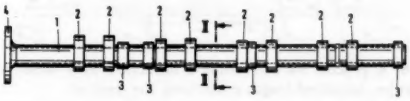
Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—888.1 **2 Claims**

1. A method of producing a member that has a core pipe upon which are secured, via expansion of said core pipe, components that are spaced from one another and have a prescribed position on said core pipe, with said expansion of said core pipe being effected by introducing a hydraulic fluid into said core pipe, said method including the further steps of:

providing components that are made of a ductile material selected from the group consisting of spheroidal graphite iron and sintered materials;

subjecting surface portions of said components to a mechanical abrasion; and



melting said surface portions of said components via a controlled laser beam in such a way as to first slightly reduce an adhesive pressure between said components and said core pipe as a consequence of said melting of said surface portions, and subsequently, after hardening of said melted surface portion and due to temperature equalization in said components and said core pipe, to increase said adhesive pressure to a higher value.

5,007,166

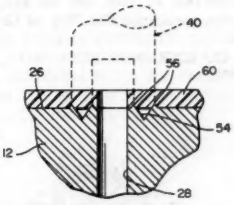
METHOD OF DECREASING AIR/FUEL LEAKAGE IN A CARBURETOR

Gary H. Erb, 513 N. Cherry, O'Fallon, Ill. 62269

Filed Nov. 29, 1989, Ser. No. 442,623

Int. Cl.[5] B23P *15/00*; **B01D** *47/00*

U.S. Cl. 29—888.011 **8 Claims**



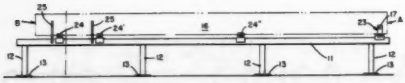
1. A method of decreasing air/fuel leakage in a carburetor including a main body defining at least one air-fuel mixture intake passage extending therethrough and a planar mounting face upon which a main jet plate is mounted with a planar face of said jet plate closely opposing said mounting face and a gasket sheet disposed and clamped between said faces and having a plurality of openings therethrough communicating with a plurality of corresponding air and fuel passage ends, each having a given diameter, opening through said faces in registry with other, said method comprising:

(a) separating said main body from said jet plate and said gasket sheet;

(b) forming circular grooves in one of said faces about the corresponding passage ends and forming at least one circular raised ridge on said one face substantially concentric with and radially adjacent each groove; and

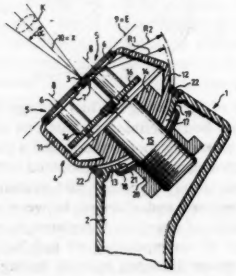
(c) reassembling said main body and said jet plate with said gasket sheet clamped therebetween, said circular raised ridges forming zones of increased pressure engagement between said one face and said gasket sheet about the corresponding passage ends by penetrating said circular raised ridges into said gasket sheet.

5,007,167
BLADE MODIFICATION TOOL AND PROCESS
Jamie R. Hill, 1325 SE. Fourth St., Cape Coral, Fla. 33904
Filed Dec. 4, 1989, Ser. No. 445,375
Int. Cl.[5] B27B *11/004*
U.S. Cl. 29—889.1 6 Claims



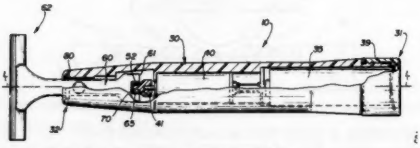
6. A process for converting a helicopter rotor blade to a shorter, approved length comprising the steps of:
installing a blade bolt through a pin bolt support bracket located on a horizontal tubular base and the base end of said rotor blade;
locating the leading edge of said rotor blade into three "V" shaped support brackets;
installing lateral support arms on each side of said rotor blade and tightening the adjusting screws to a firm grip on said rotor blade;
strapping the out board end of said rotor blade to said base to secure portion of blade to be cut off; and
cutting off out board twenty four inches of said rotor blade.

5,007,168
ELECTRIC DRY SHAVING APPARATUS WITH A MOVABLE SHAVING HEAD ARRANGEMENT
Werner Messinger, Kronberg; Karl Tröltsch, Frankfurt am Main, and Bernd Tewes, Wiesbaden, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Dec. 20, 1989, Ser. No. 453,718
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1988, 3843936
Int. Cl.[5] B26B *19/20, 19/14, 19/16, 19/44*
U.S. Cl. 30—43 19 Claims



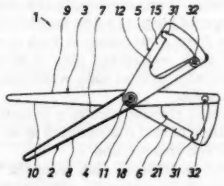
1. A dry shaving apparatus comprising a housing, a shaving head movably carried on said housing, said shaving head including at least one shaving assembly, said shaving assembly including a circular upper cutter and a rotary lower cutter, said lower cutter having an axis of rotation aligned at right angles to a shearing plane (E) extending parallel to the outer surface of said upper cutter, said shaving head having an axis of symmetry intersecting said shearing plane (E) at right angles in the geometric center of said shaving head, and structure supporting said shaving head on said housing so that said geometric center is provided as a stationary pole for said shaving head axis of symmetry which is movable with said shearing plane (E) in any direction, relative to the housing.

5,007,169
VIBRATING RAZOR
Vincent C. Motta, West Norwalk, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Dec. 11, 1989, Ser. No. 448,779
Int. Cl.[5] B26B *19/28, 19/02, 21/14*
U.S. Cl. 30—45 34 Claims



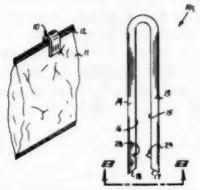
1. An electric vibrating razor comprising:
an electric motor with a rotatable shaft;
a battery for powering said electric motor;
a substantially hollow handle which substantially encases said electric motor and said battery wherein said handle has a longitudinal axis;
a solid shaver head pivotally attached to said handle wherein said shaver head has a distal end with means for supporting a cartridge, and a proximal end;
means for coupling said proximal end of said shaver head to said rotatable shaft.

5,007,170
SCISSORS FOR BOTH RIGHT AND LEFT HAND USE
Tatsushige Mayama, Osaka, Japan, assignor to NT Incorporated, Osaka, Japan
Division of Ser. No. 363,880, Jun. 9, 1989, abandoned. This application Apr. 25, 1990, Ser. No. 513,019
Int. Cl.[5] B26B *13/20*
U.S. Cl. 30—232 5 Claims



1. Scissors comprising:
a front blade having upper and lower cutting edges;
a rear blade having upper and lower cutting edges;
connecting means pivotally connecting the front blade and the rear blade for slidable pivoting movement relative to each other;
a front handle having a first finger receiving portion thereon, and
a rear handle having a second finger receiving portion thereon,
characterized in that the connecting means engages not only the front and rear blades but also the front and rear handles so that the front and rear handles and the first and second finger receiving portions provide thereon respectively are pivotal on the connecting means.

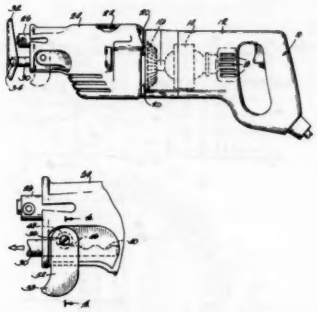
5,007,171
BAG OPENER APPARATUS
John H. Horning, Jr., 51934 Lily Rd., South Bend, Ind. 46637
Filed May 7, 1990, Ser. No. 519,810
Int. Cl.[5] B67B *7/00*
U.S. Cl. 30—294 **1 Claim**



1. A bag opener apparatus comprising,
a "U" shaped body, the "U" shaped body including a first leg spaced from and parallel to a second leg in a first position and in an unparallel relationship in a second position when the first and second legs are squeezed together relative to one another, and
the first and second legs joined together, including an elongate arcuate intersection, the "U" shaped body formed of a memory retentive deformable material, and
the first leg including a first interior surface, and the second leg including a second interior surface, wherein the first and second interior surfaces are parallel relative to one another in the first position, and
the first and second legs coextensively aligned relative to one another in the first position, and
knife means mounted to the first interior surface to effect severing of a bag directed between the first and second interior surfaces, and
wherein the knife means includes an elongate knife defined by a "V" shaped cross-sectional configuration, and
wherein the first leg includes a first side edge spaced from and parallel to a second side edge, and the "V" shaped knife aligned with the first interior surface at the first side edge and extending above the first interior surface at the second side edge a predetermined height, and
including an elongate groove defined by a "V" shaped cross-sectional configuration aligned with the knife, wherein the groove is formed within the second interior surface, and the knife and the groove are aligned relative to one another, and
wherein the first leg includes a first beveled terminal end edge, and the second leg includes a second beveled terminal end edge, wherein the first and second beveled end edges are in confronting relationship to receive the bag therebetween, and
wherein the groove is defined by a predetermined depth, the predetermined depth less than that defined by the predetermined height of the knife adjacent the second side edge.

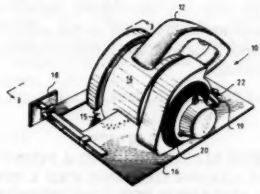
5,007,172
QUICK CHANGE GUIDE SHOE
Bernhard Palm, Brookfield, Wis., assignor to Milwaukee Electric Tool Corporation, Brookfield, Wis.
Filed Jun. 13, 1990, Ser. No. 537,474
Int. Cl.[5] B27B *11/02*
U.S. Cl. 30—377 **2 Claims**

1. A power saw having a body including a nose section and including,
a reciprocating saw blade projecting from said nose section,
a post mounted in said nose section for slideable movement generally parallel to said saw blade,
a guide shoe mounted for limited pivotal movement on said post,
a plurality of transverse grooves spaced along the length of said post,
a lock pin rotatably mounted in said nose section transverse and spaced from the axis of said post,
said pin being rotatable between a lock position and a release position and having a portion engageable with whichever of said grooves is positioned adjacent the pin,



a portion of said pin being shaped to clear and not engage said post when said pin is rotated to said release position,
an end of said pin projecting from said nose section,
and a lever mounted on said end of said pin for actuating said pin.

5,007,173
GASOLINE ENGINE POWERED HAND-HELD CIRCULAR SAW
Robert E. Rush, 560 Mellon Bridge Rd., Oxford, Ala. 36203
Filed Jun. 14, 1990, Ser. No. 537,800
Int. Cl.[5] B23D *45/16*; B25F *11/00*
U.S. Cl. 30—391 **5 Claims**



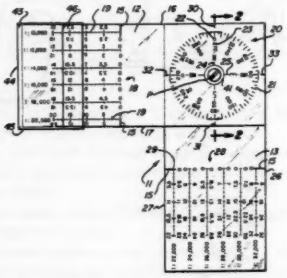
1. A gasoline engine powered hand-held circular saw, comprising:
(a) a casing having a front, a top, and a bottom;
(b) a fuel tank disposed substantially on said front of said casing;
(c) a circular saw blade disposed substantially within said casing;
(d) an internal combustion engine disposed substantially along side said circular saw blade within said casing, said internal combustion engine having a crankshaft with an end, said circular saw blade being connected to said end of said crankshaft of said internal combustion engine; and
(e) a handle disposed substantially on said top of said casing so that the saw can be easily handled and used.

5,007,174

TOPOGRAPHIC MEASURING DEVICE

Robert J. Cook, 316 W. Prospect, Apt. 209, Fort Collins, Colo. 80526

Filed Jan. 22, 1990, Ser. No. 468,233
Int. Cl.[5] B43L *7/10*
U.S. Cl. 33—1 SD **28 Claims**



1. A measuring device for topographic sheets having different distance scales comprising:

transparent top and bottom arms pivotally connected together to move relative to one another about a pivot, each of said arms having a pair of longitudinal edges,

a plurality of different distance scales extending along each of said arms, each of said distance scales extending parallel to the longitudinal edges of the associated arm and having a series of spaced graduation lines arranged perpendicular to the longitudinal edges of the associated arm,

said top arm carrying a protractor with a center, said protractor having a protractor line with 0 to 180 indicia,

said bottom arm having pointer means adjacent and operatively associated with said protractor, said pointer means being offset 90 degrees on the bottom arm with respect to the orientation of said protractor line on said top arm when said top and bottom arms are superposed on one another,

one of said distance scales on one of said arms being used to measure the distance between two selected points on a selected one of said topographic sheets by the placement of said one distance scale for that sheet so that both of said points intersect said selected distance scale,

the other of said arms being rotated until a selected line associated with said other arm is parallel to a reference line to provide an indication of the angle formed by said one distance scale with said reference line and readable on said protractor.

5,007,175

SYSTEM FOR MATERIALIZING A POINT IN SPACE, APPLICATIONS THEREOF AND A TOOLING ASSEMBLY FOR SAID SYSTEM

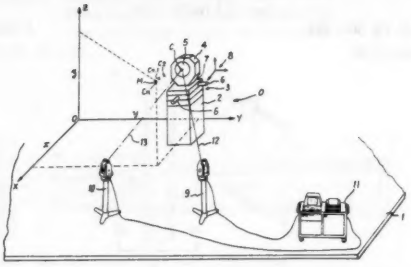
Jean-Claude Schwarz, Le Puy Sainte Reparade, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Feb. 21, 1990, Ser. No. 482,548
Claims priority, application France, Feb. 21, 1989, 89 02243
Int. Cl.[5] G01C *3/00*
U.S. Cl. 33—286 **27 Claims**

1. A system fore materializing in space a point whose coordinates in a system of reference axes are known, comprising:

an optical aiming apparatus, occupying a pre-determined position with respect to said system of axes and making it possible to determine, in said system of axes, the coordinates of any point aimed at, and

a tooling assembly comprising a stand, one part at least of which is movable with respect to said system of axes and a hemispherical ball joint mounted in a spherical concave seat fixed to said movable part of the stand, the center of



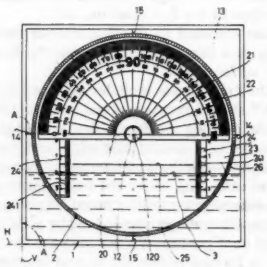
said ball joint being marked so as to be visible by said aiming apparatus.

5,007,176

SIMPLY-CONSTRUCTED INSTRUMENT FOR MEASURING HORIZONTAL LINE, VERTICAL LINE AND ANGLES

Ming-Chuan Huang, P. O. Box 55-1670, Taipei 10477, Taiwan

Filed Oct. 1, 1990, Ser. No. 591,242
Int. Cl.[5] G01C *9/20*
U.S. Cl. 33—377 **4 Claims**



1. An instrument for measuring angles comprising:

a casing generally square shaped and formed with four sides walls, a transparent covering plate and a base plate, said casing forming an inner jacket and two axial lines crossing each other at a center of said transparent covering plate of said casing, of which one axial line is perpendicular to two vertical side walls but parallel to the other two horizontal side walls, and the other axial line is perpendicular to the two horizontal side walls but parallel to the two vertical side walls;

a coloured liquid filled in said inner jacket of said casing; and a rotating disc generally made of transparent material pivotally mounted at a center of said transparent covering late of said casing including an upper half circle portion above a central diametrical line passing the center of said covering plate of said casing radially formed with a plurality of angular graduations in term of degrees and a lower half circle portion below the central diametrical line formed with two vertical columns parallel with each other, said two columns respectively formed with a plurality of horizontal graduations of which any two corresponding horizontal graduations of said two columns are interpolated to form a reference line between the two horizontal graduations parallel to said diametrical line,

whereby upon a rotation of said rotating disc about a pivot formed at the center of said casing to allow said reference line between said two horizontal graduations to be parallel

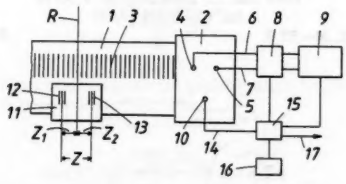
to a liquid level of said coloured liquid, an angle an be obtained by matching the angular graduation with one of said axial lines formed on said covering plate when said casing is laid on or coincided with a plane to be measured.

5,007,177

INCREMENTAL MEASURING SYSTEM

Heinz Rieder, Oberndorf, and Max Schwaiger, Ostermiething, both of Austria, assignors to RSF-Elektronik Gesellschaft m.b.H., Tarsdorf, Austria

Filed Jan. 22, 1990, Ser. No. 467,945
Claims priority, application Austria, Feb. 3, 1989, 219/89
Int. Cl.[5] G01B 7/02, 11/02
U.S. Cl. 33—706 **5 Claims**



1. In an incremental measuring system comprising.

a scale member provided with a scale consisting of a sequence of scale increments and further provided with a plurality of reference marks spaced apart along said scale,

a scanning unit mounted to perform relative to said scale member a non-contacting scanning movement in opposite directions along said scale and comprising a plurality of scale-scanning sets for scanning said scale and for producing analog measured-value signals in response to the scanning of said scale, and a reference mark scanning set for scanning said reference marks and for producing a reference mark signal in response to the scanning of said reference marks, and

evaluating means for receiving said measured-value signals and for deriving from said measured-value signals digital countable signals and a direction signal indicating the direction of said scanning movement, said evaluating means comprising counting means for counting said countable signals in a sense depending on said direction signal and for generating a count indicating the position of said reference mark scanning relative to said scale, and an evaluating circuit for receiving said reference mark signal and for generating a reference pulse when said counting means indicate that said scale member is being scanned by said reference mark scanning set at a reference point, which registers with a predetermined one of said scale increments and is spaced along said scale from each of said reference marks,

the improvement comprising

at least one reference mark carrier releasably secured to said scale member,

said reference marks comprising at least one pair of first and second reference marks on said carrier and spaced along said scale,

selecting means for defining for said reference point on said carrier a location which is disposed between said first and second reference marks and is spaced first and second distances from said first and second reference marks, respectively, which selecting means comprise memory means for storing said first and second distances, and wherein

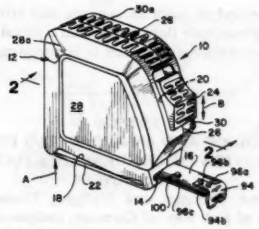
said evaluating circuit comprises a pulse shaper stage for generating said reference pulse and a control circuit for indicating in dependence on said direction signal and on said reference mark signal that said reference mark scanning set is scanning one of said first and second reference marks by a scanning movement toward the other of said first and second reference marks, and for causing said pulse shaper stage to generate said reference pulse when said counting means indicate that said reference mark scanning set has moved from said one reference mark toward the other over said one of said stored distances.

5,007,178

MEASURING TAPE DEVICE

Robert J. Dewire, Naperville, and Walter A. Kozlowski, Schaumburg, both of Ill., assignors to Sears, Roebuck & Co., Chicago, Ill.

Filed Jun. 29, 1989, Ser. No. 374,005
Int. Cl.[5] G01B 3/10
U.S. Cl. 33—767 **10 Claims**



1. A measuring tape device, comprising:

a casing having an aperture through which a coilable measuring tape can be extracted and retracted;

a coilable measuring tape disposed in the casing with a distal end projecting from the aperture;

a first brake mechanism mounted on and normally recessed within the bounds of the casing for normally applying a controlled drag on the tape which allows the tape to be extracted or retracted against the drag to any given length and held at said length and being selectively operable to release the normal application of the controlled drag; and

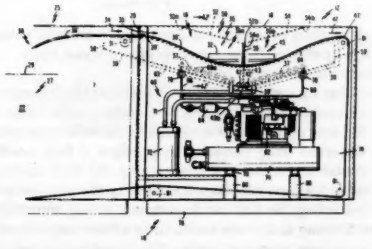
a second brake mechanism mounted on the casing and being selectively operable for applying a positive lock on the tape greater in magnitude than the drag of the first brake mechanism to prevent accidental extraction or retraction of the tape.

5,007,179

COLD AIR LOCK VAPOR SEAL FOR PROCESS SOLVENT VAPOR RECOVERY AND CONTROL

Joel E. Rodgers, Sr., Convent Station, N.J.; Ambrose J. Schmitz, Lake Barrington, Ill., and Alton D. Romig, Mine Hill, N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Sep. 21, 1989, Ser. No. 410,216
Int. Cl.[5] F26B 3/00, 21/06
U.S. Cl. 34—22 **37 Claims**



23. A method of limiting outflux of a solvent vapor from a degreaser containing a supply of solvent through which de-

greaser articles to be degreased are conveyed from an entrance end of the degreaser for discharge through an exit end, comprising the steps of:

(a) conveying said articles from the entrance end into contact with at least one of said solvent supply or a vapor zone thereof;

(b) directing said articles from contact with the solvent supply or vapor thereof through the conveyor exit end;

(c) causing said articles to pass through a conveyor flow path in said exit end provided with chilled air in a section of the flow path which is elevationally lower than flow path sections in said exit end respectively disposed upstream and downstream from the chilled air section; and

(d) collecting solvent liquid condensed within the chilled air section.

28. The method of claim 23, wherein said articles pass into an inlet of the conveyor flow path which is elevationally above a vapor zone within the degreaser in communication with the inlet.

5,007,180

METHOD OF AND AN APPARATUS FOR THE SEPARATION OF CONDENSABLE HARMFUL SUBSTANCES

Michael Christ, Stuttgart, and Wolfgang Teichmann, Filderstadt, both of Fed. Rep. of Germany, assignors to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

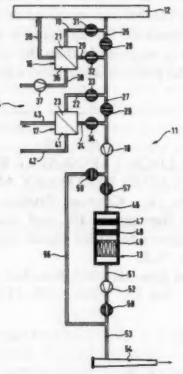
PCT No. PCT/EP88/00807, § 371 Date Jun. 12, 1989, § 102(e) Date Jun. 12, 1989, PCT Pub. No. WO89/03499, PCT Pub. Date Apr. 20, 1989

PCT Filed Sep. 7, 1988, Ser. No. 375,011

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1987, 3734388

Int. Cl.[5] F26B *3/00*

U.S. Cl. 34—32 **18 Claims**



1. A method of separating condensable harmful substances and solid particles from a process gas or waste air,

comprising the steps of:

pre-filtering a warm waste air in a first heat-exchanger stage by cooling this air with a first cooling medium to below the dew point of first condensable harmful substances and dispersed solid particles to produce a first condensate containing impurities, discharging the first cooling medium for heat recovery and heating the process gas, and extracting the first condensate containing impurities;

pre-filtering said warm waste air in a following second heat-exchanger stage by cooling this air with a second cooling medium to below the dewpoint of second condensable harmful substances to produce a second condensate containing impurities, and extracting the second condensate containing impurities; and

mechanically final filtering the waste air in a third stage after it has been cleansed twice in said first and said second stage.

5,007,181

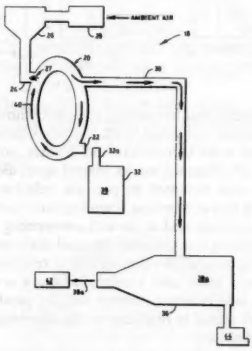
DEAGGLOMERATING DIRECT-FIRED FLASH DRYER FOR DRYING STIR-IN PHOSPHORS AND METHOD OF USING SAME

Douglas M. Jackson, Monroeton, and John A. Arbie, Sr., Towanda, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 22, 1990, Ser. No. 473,778

Int. Cl.[5] F26B *17/00*

U.S. Cl. 34—57 R **9 Claims**



1. An improved direct-fired flash dryer for drying stir-in halophosphate phosphor to a deagglomerated state, comprising:

a glass toroidal drying chamber;

a teflon-coated feeder for transferring a wet phosphor cake from filtering means to said drying chamber;

an inlet blower to provide a gaseous stream to said drying chamber for circulation therein;

means for heating said gaseous stream;

a phosphor collector connected by glass conveying means to said drying chamber for collecting said phosphor; and

and exhaust fan connected by glass conveying means to said collector to draw said gaseous stream through said drying chamber and said collector.

5,007,182

BODY DRYER

Sam Fishman, 6 Amberly Ct., Marlboro, N.J. 07746, and Michael J. Marchese, 12812 Willoughby La., Bayonet Point, Fla. 34667

Filed Jan. 31, 1990, Ser. No. 473,019

Int. Cl.[5] F26B *19/00*

U.S. Cl. 34—90 **24 Claims**

1. An apparatus for drying a user's body comprising:

a support frame;

a platform means dimensioned to permit a user to stand on a surface thereof and supported on the frame, the platform means being formed with an upwardly extending surface portion positioned to bear against and cause the toes of the user to spread, said platform means being formed with

aperture means therethrough permitting airflow therethrough to the body of the user standing thereon; and

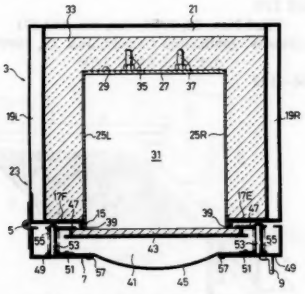
a fan means mounted under the platform means for directing air through said aperture means.

5,007,183

VACUUM DRIER APPARATUS

Nobutoshi Kobayashi, and Tetsuo Murakami, both of Tokyo, Japan, assignors to Nippon Scientific Co., Ltd. and Kusumoto Chemicals Co., Ltd., both of Tokyo, Japan

Filed Sep. 18, 1990, Ser. No. 583,999
Claims priority, application Japan, Sep. 20, 1989, 1-242137
Int. Cl.[5] E26B *13/30;* **E06B** *7/28, 9/00*
U.S. Cl. 34—92 **5 Claims**



1. A vacuum drier apparatus, comprising:

a vacuum drying chamber having a vacuum drying space for performing a vacuum drying on an object to be dried therein, the vacuum drying space having an opening section; and

an openable door having an opening window, which is provided in front of the vacuum drying chamber to close off the opening section of the vacuum drying space, the door including:

a transparent glass plate provided on a rear side of the opening window facing toward the opening section of the vacuum drying space, which seals off the opening section when the door is closed;

a transparent protection member provided on a front side of the opening window facing away from the opening section of the vacuum drying space, in front of the glass plate; and

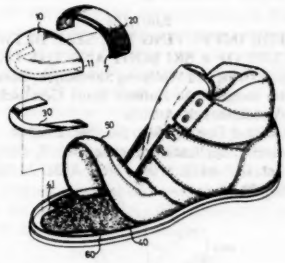
elastic supporter means located between the glass plate and the protection member, for supporting the glass plate and the protection member with respect to each other, such that the glass plate can be pressed tightly to seal off the opening section of the vacuum drying space, while the protection member can be pushed away from an edge of the front side of the opening window by an external pressure exerting on the protection member.

5,007,184

SAFETY SHOE

Chien A. Lee, Room 704, No. 592, Lin Sen N. Rd., Taipei, Taiwan

Filed Jun. 21, 1989, Ser. No. 369,121
Int. Cl.[5] A43B *23/08*
U.S. Cl. 36—77 R **2 Claims**



1. A safety shoe comprising:

a steel toe box (**10**) having an inwardly turned relatively wide flange (**11**), said flange (**11**) having a larger width at two opposing respective end portions (**12**) and having a smaller width at a central portion (**14**) for increasing the tensile strength of said toe box (**10**), said flange (**11**) having a gradually thinner thickness from a junction portion to an edge thereof;

a polyethylene liner (**20**) having a shoulder for mounting and partial contiguous interface with said steel toe box (**10**);

a U-shaped pad (**30**) made of a hardened material having a size and shape substantially matching with a size and shape of said flange (**11**) of said steel toe box (**10**) for supporting said steel toe box (**10**); and,

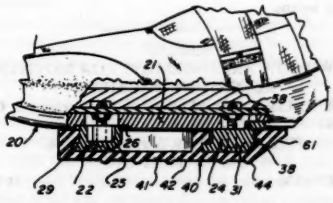
a middle sole (**40**) having a front end that lies below a front end of said flange (**11**) and having a U-shaped cutout (**41**) for alignment with and retention of said U-shaped pad (**30**), said middle thickness sole (**40**) having a thickness that is greater than a thickness of said U-shaped pad (**30**).

5,007,185

CLEAT COVER FOR BUCYCLE SHOE

Margaret A. Lazarski, P.O. Box 6594, Denver, Colo. 80206

Filed Oct. 13, 1989, Ser. No. 421,448
Int. Cl.[5] A43B *5/00*
U.S. Cl. 36—135 **9 Claims**



1. A cleat cover for use on a bicycle shoe equipped with a pair of bicycle pedal engaging shoe cleats defining spaced apart longitudinally aligned front and rear cleats mounted on a sole plate of said bicycle shoe, each cleat having a body portion defining a forwardly extending lip overhanging the sole plate and the rear cleat further defining a rearwardly directed notch

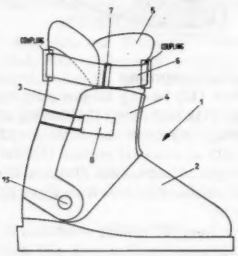
adjacent the sole plate, said cleat cover comprising a removable elastomeric shallow cup shaped housing for surrounding and covering said front and rear cleats, means on said housing for releasably engaging the forwardly extending lip of each of said cleat and securing said housing to said cleats, and means on said housing for releasably engaging within the rearwardly directed notch of said rear cleat, said lip engaging means and notch engaging means releasably gripping and securing said cover in cleat enclosing relationship whereby said cleats are protected by said cover to adapt said bicycle shoe for temporary use as a walking shoe.

5,007,186

DEVICE FOR IMPROVING THE SEAL BETWEEN THE CUFF OF A SKI BOOT AND THE LEG

Horst Bischof, Graz, and Wolfgang Skerbinjek, Baernbach, both of Austria, assignors to Koflach Sport Gesellschaft mbH & Co. KG, Voecklabruck, Austria

Filed Dec. 2, 1988, Ser. No. 279,064
Claims priority, application Austria, Dec. 7, 1987, 3219/87
Int. Cl.[5] A43B *5/04, 11/00*; A43C *11/00*
U.S. Cl. 36—121 **22 Claims**



1. In a ski boot having at least one movable cuff part and an opposing inner liner, an improvement in the seal between the boot and a user's leg when the boot is closed around the user's leg, comprising the combination of:

band means for encircling one movable cuff part and the inner liner of the boot and for providing an adjustable closing seal between said movable cuff part, the inner liner and the leg; and

at least one coupling means mounted on the boot for releasably attaching said band means to the boot wherein said coupling means is optionally attached at said movable cuff part or at said inner liner at a point approximately on the longitudinal central axis of the boot on the external surface of said inner liner or at both said locations and wherein the coupling means mounted onto said movable cuff part is designed differently from the coupling means mounted on said inner liner so as to provide varying, selectable mounting positions of said band onto said coupling means.

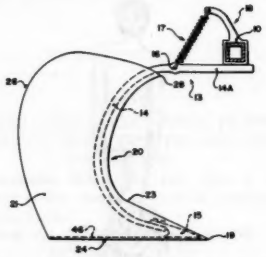
5,007,187

SNOW PLOW ARRANGEMENT FOR MOISTURE RETENTION IN A FIELD

Mervin R. J. Lloyd, Box 55, D'Arcy, Saskatchewan, Canada S0L 0N0

Filed Aug. 7, 1989, Ser. No. 390,236
Int. Cl.[5] E01H *4/00*
U.S. Cl. 37—220 **11 Claims**

1. Apparatus for improving moisture retention in the field comprising a frame, means for transporting the frame across the ground in a working direction, and a plurality of snow plow members each mounted on the frame and spaced in relation transverse to the working direction, each being shaped to form a furrow in snow on the ground and each being spaced and arranged such that the furrow formed by one is spaced from the furrow formed by the next, each of the snow plow members having a leading edge with a lowermost and forwardmost apex on a bottom end thereof and a pair of



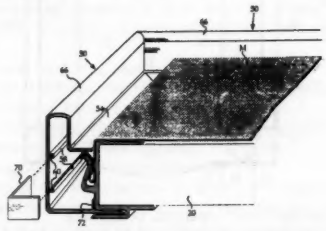
diverging side surfaces extending from the leading edge to trailing edges thereof and wherein the distance between one snow plow member and the next snow plow member is greater than the width of each of the snow plow members across said trailing edges thereof, each of the diverging side surfaces having a lowermost leading edge lying in a substantially horizontal plane containing the apex, the leading edge being c-shaped so as to extend in a curved line rearwardly and upwardly from the apex to a rearmost point and from the rearmost point in a curved line forwardly and upwardly to an uppermost point forward of the rearmost point.

5,007,188

FRAMING SYSTEM AND COMPONENT PARTS THEREOF

Harold E. Feist, 374 Delaware Avenue, Toronto, Ontario, Canada M6H 2T8

Filed Nov. 28, 1989, Ser. No. 442,271
Claims priority, application Canada, Jun. 19, 1989, 603198
Int. Cl.[5] A47G *1/06*
U.S. Cl. 40—152 **16 Claims**



13. A member for use in a framing system, said member having a generally rectangular C shaped cross section having a top wall, side wall and bottom wall, a jaw extending along said side wall defining therewith a pocket opening towards said top wall;

a lip extending along said bottom wall and defining therewith a slot opening towards said side wall, and

said pocket and said slot being substantially coextensive with said side wall and said bottom wall respectively.

5,007,189

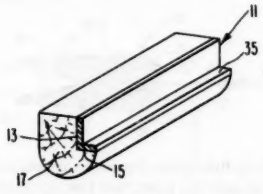
SEAL FOR ART DISPLAY FRAMES OF WOOD

Kendrick Buckwalter, 18 Chetwynd Rd., Paoli, Pa. 19301

Filed Mar. 17, 1988, Ser. No. 169,278
Int. Cl.[5] A47G *1/06*
U.S. Cl. 40—152 **1 Claim**

1. A wooden picture frame, having a rabbet configuration, as part thereof, which is sealed against the passage of liquids, gasses, vapors and tiny life forms emanating from said rabbet configuration comprising in combination: a wooden frame

including an inside wall section and a ledge section protruding therefrom whereby said inside wall section and said ledge section together substantially form the shape of the letter "L"; sealing means formed substantially in the shape of the letter "L", having a base section and an elongated section extending from said base section; said sealing means formed and disposed so that said base section is in abutment with said ledge section



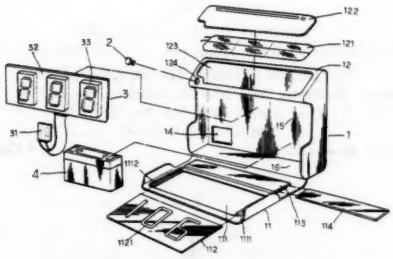
and of substantially the same width and length of said ledge section and said sealing means further formed and disposed so that said elongated section is in abutment with said inside wall section and of substantially the same width and length of said inside wall section; said sealing means formed of material which is impervious to the passage of liquids, gases, vapors and tiny life forms.

5,007,190

SOLAR HOUSE-NUMBER INDICATING DEVICE

Chih-Yes Shyu, 4F, No. 144, Chu-Lin Road, Yung Ho, Taipei, Taiwan

Filed May 11, 1990, Ser. No. 522,101
Int. Cl.[5] G09F *13/04*
U.S. Cl. 40—564 **1 Claim**



1. A house-number indicating device comprising:

a house means provided with a front opening and an inner space defined by a pair of opposed, side wall, a rear wall, a flat bottom wall and a top wall, said top wall being formed with a top opening taking a major portion thereof and a bore locating in a corner, said rear wall being formed with at least a rear opening;

a door means attached to said housing means for closing said front opening of the housing means and being movable to open said opening;

a first and a second transparent means integrally formed in the door means;

rail means located on the inside surface of the door means disposed on opposite sides of the first transparent means;

a tunnel member located on the inside surface of the door means covering the second transparent means from inside of the door means and defining a passageway transverse to the rail means;

a first transparent plate marked with a series of desired numbers and releasably and slidably mounted on the rail means, said series of numbers facing the first transparent plate;

a second plate marked with a desired road name and releasably and slidably mounted in the tunnel member along the passageway defined thereby;

a solar battery characterized in converting solar energy into electric power and placed on the flat bottom in the inner space of the housing means;

a radiant solar energy collecting surface and a transparent layer for protecting the radiant solar energy collecting surface, which are corresponding in shape to the top opening, sequentially and fixedly fitted in the opening, said radiant solar energy collecting surface being connected to the solar battery;

a L.E.D. digital device having means for displaying digits which are selective to be corresponding to the series of numbers marked on the first transparent plate;

a control circuit means having a control circuit electrically connected to the L.E.D. digital device for number selection and ON-OFF controls and a series of switches for operating the number selection control and fitted in the opening of the rear wall of the housing means with the switches thereof exposing externally; and

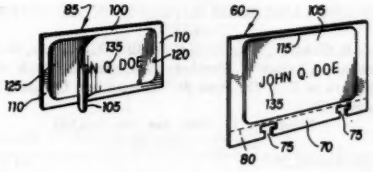
a sensor unit located in said bore characterized in self-adjusting its resistance compliant with the sunlight absorbed thereby for operating ON-OFF control of the control circuit of the control circuit means.

5,007,191

BUSINESS CARD AND CARD STOCK WITH LIFT-OUT PANEL AND BONDED EDGES

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020

Continuation-in-part of Ser. No. 177,375, Apr. 4, 1988, Pat. No. 4,905,392. This application Nov. 7, 1988, Ser. No. 267,859
Int. Cl.[5] G09F *3/10*
U.S. Cl. 40—638 **11 Claims**

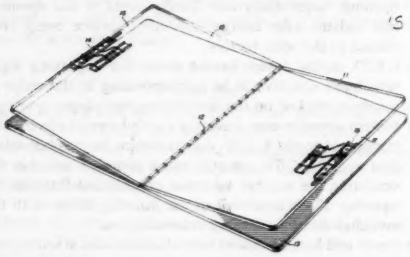


1. A business card, or the like, formed as a laminate including a face sheet adapted to carry information at its front side and having a contact adhesive at its back side, and a backing sheet secured to the face sheet by the contact adhesive, the improvement comprising:

(a) a score-cut means delineating and defining a lift-out panel in the face sheet and an edge margin strip between an edge of the panel and an edge of the business card; and

(b) a release means on the backing sheet engaging the lift-out panel of the face sheet to permit the lift-out panel to be separated from the edge margin strip at the score-cut means and lifted out and removed from the body of the card with the contact adhesive at the back side of the lift-out panel being intact while the edge margin strip of the face sheet and corresponding marginal portion of the backing sheet remain tightly and permanently bonded together by the contact adhesive, said release means extending a short distance beyond the score-cut means and a short distance into the marginal edge strip, whereby to insure a positive and easy separation of the lift-out panel and contact adhesive thereon from the backing sheet.

5,007,192
LAPBOARD
Nelson Hochberg, P.O. Box 192, Flagstaff, Ariz. 86002
Filed Oct. 19, 1988, Ser. No. 259,715
Int. Cl.[5] G09F *3/18*
U.S. Cl. 40—661 2 Claims

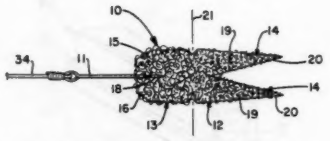


1. A navigation lapboard for holding aviation charts, flight logs, or the like, comprising in combination:
(a) a clear base sheet for supporting two or more charts or the like, and having first and second opposing edges;
(b) a hinged spring clip secured to said clear base sheet between the first and second opposing edges thereof; and
(c) first and second clear cover sheets for covering two or more charts or the like, each of said first and second clear cover sheets being attached to said hinged spring clip and generally overlying said clear base sheet;
whereby each of said first and second clear cover sheets can hinge out to permit a chart or the like to be inserted between each of said clear cover sheets and said clear base sheet.

5,007,193
FISHING LURE WITH IMPROVED ELASTOMERIC SKIRT
George R. Goodley, Kinston, N.C.; Phillip R. Harman, Waynesboro, and Charles W. Prather, Charlottesville, both of Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 17, 1990, Ser. No. 466,553
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.28 11 Claims

6. An artificial fishing lure comprising a body having attached thereto a fish hook and a skirt of multiple flexible strands, each strand being formed from coalesced multiple filaments of synthetic elastomeric polymer, the polymer being a clear spandex polymer or a clear thermoplastic elastomer, the individual filaments of the strand being circular, non-circular or hollow in cross-section, the skirt comprising 10 to 300 strands, each strand being formed of 40 to 300 coalesced filaments and having a void fraction of at least 0.25 and a titer in the range of 940 to 13,000 dtex.

5,007,194
ARTIFICIAL FISHING LURES
Archibald S. Coody, Hemphill, Tex., assignor to Fred Arbogast Company, Inc., Akron, Ohio
Filed Jan. 26, 1990, Ser. No. 470,850
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.29 9 Claims



1. An artificial fishing lure for use in association with a fish hook having at least one point, said lure comprising:
a body having a forward head portion and a trailing portion;
said body portion is natural sheepskin which presents at least one planar surface and which exhibits supple flexibility, at least when immersed in water;
a plurality of relatively long fibers which are the natural wool fibers presented from the planar surface of said sheepskin and extending outwardly from said head portion;
said head portion adapted to be penetrated by the point of a fish hook.

5,007,195
WEEDLESS FISHING HOOK AND LURE
James A. Patterson, 2074 20th St., Sarasota, Fla. 34236
Filed Apr. 3, 1990, Ser. No. 504,343
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.43 6 Claims

6. A weedless-type fish hook comprising:
three fish hooks each having connected, coextending shanks each with a hooking end and a common eyelet end;
each said hooking end having a sharp distal tip and a barb spaced from said tip;
a length of very thin, flexible, pliable, pierceable entirely hollow tubing, one end of which is securely fitted over each said hooking end so as to conceal each said tip and each said barb within one said tubing, the other free end of each said tubing being slidably insertable through said eyelet end;
each said tip piercing through the corresponding said tubing and exposing each said tip for use when said tubing is manually flexed by hand between said tip and said eyelet end toward said shanks prior to use;
said tubing is internally lubricated.

5,007,196

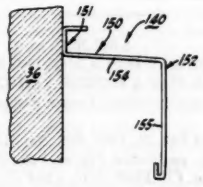
INSECT GUARD SYSTEM AND METHOD OF USE

Anne L. Saunders, and John G. Fields, both of P.O. Box 979, Jamestown, Calif. 95327

Continuation-in-part of Ser. No. 367,848, Jun. 19, 1989, which is a continuation of Ser. No. 119,787, Nov. 12, 1987, Pat. No. 4,839,984. This application Feb. 8, 1990, Ser. No. 477,351

Int. Cl.[5] A01M *19/00, 1/22*

U.S. Cl. 43—112 6 Claims



1. A system for repelling crawling insects, comprising an elongated electrically insulating substrate comprising a flange section for mounting to a protected structure and an L-shaped shield section including a generally outwardly-extending base and a downwardly-extending leg spaced from the protected structure; a pair of elongated spaced-apart conductors mounted on the inside of the base and extending generally in the direction of the elongation; and power assembly means connected to said conductors for establishing a voltage differential providing a short circuit current of less than about 15 milliamps across said conductors, whereby crawling insects crossing the spaced conductors are subjected to electrical shock caused by bridging the voltage differential.

5,007,197

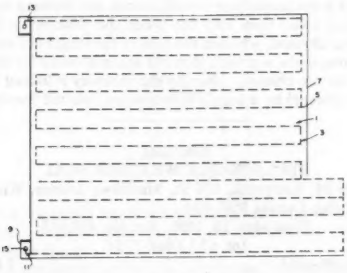
TERMITE CONTROL SYSTEM

Betty G. Barbett, P.O. Box 366, Barbers Point, Hi. 96862-0366

Filed Oct. 4, 1989, Ser. No. 417,066

Int. Cl.[5] A01M *1/24*

U.S. Cl. 43—124 11 Claims



1. The method of termite treatment comprising determining proper spacing for drip tubing by a using a sample of the tubing on compacted soil in a slab area to determine rate of water movement into the soil, laying pressure-compensating drip tubing on top of the soil with openings in the tubing facing downward, and spacing lengths of the tubing at predetermined distances according to the rate of water movement determination, leaving first and second ends of the tubing exposed and extending outward from the slab area, covering the tubing with sand, covering the sand with a vapor barrier, covering the vapor barrier with gravel and pouring cement on top of the gravel and vapor barrier, thereby forming a slab, and releasing insecticide through the drip tubing into the soil beneath the slab.

5,007,198

PROCESS FOR THE ACCELERATED PRODUCTION OF TRIPLOID SEEDS FOR SEEDLESS WATERMELON CULTIVARS

Dennis J. Gray, Howey-in-the-Hills, and Gary W. Elmstrom, Leesburg, both of Fla., assignors to University of Florida, Gainesville, Fla.

Filed Jun. 8, 1988, Ser. No. 204,158

Int. Cl.[5] A01H *5/00, 4/00*; C12N *5/00*

U.S. Cl. 47—58 9 Claims

1. A process for producing triploid seed for seedless watermelons, said process comprising the following steps:

i. Producing and identifying a suitable tetraploid parental cultivar;

ii. Cloning the tetraploid parental cultivar using in vitro tissue culture techniques;

iii. Transplanting and growing the new plants in a suitable soil medium;

iv. Planting the tetraploid plants in a field or greenhouse in a mixed stand with diploid plants; and

v. Collecting the triploid seed from the fruit produced when the tetraploid plants are pollinated by the diploid plants.

5,007,199

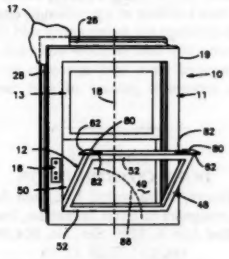
ANTI-INTRUSION WINDOW

John E. Dunagan, Solon, and Stanley Bernath, Pepper Pike, both of Ohio, assignors to Larmco Security, Inc., Walton Hills, Ohio

Filed Feb. 15, 1990, Ser. No. 480,238

Int. Cl.[5] G08B *13/08*

U.S. Cl. 49—13 28 Claims



1. An anti-intrusion window comprising:

a frame assembly adapted to be attached to a building structure;

a sash assembly supported by said frame assembly for movement with respect to said frame assembly along a path of travel;

a position indicator supported by one of said assemblies;

a sensor supported by the other of said assemblies so that said sensor and said position indicator move with respect to one another when said sash assembly is moved along said path of travel, said sensor effective to detect the presence of said position indicator near said sensor; and,

an alarm system for triggering an alarm in response to the momentary presence of said position indicator near said sensor;

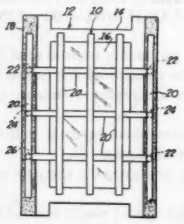
said sash assembly comprising means for moving said sash assembly along a second path of travel between a position on said first path of travel and a cleaning position wherein opposite sides of said sash are accessible for cleaning from the same side of the window and said sensor and said position indicator are supported by said assemblies such that movement along said second path to said cleaning position maintains said position indicator and said sensor apart to prevent said momentary presence.

5,007,200

WINDOW SECURITY SYSTEM

Gustavo Londono, 9117 Tivoli Pl., Boca Raton, Fla. 33434

Filed Feb. 12, 1990, Ser. No. 478,518
Int. Cl.[5] E05B *65/10*
U.S. Cl. 49—141 **18 Claims**



1. A releasable window security device for protecting against entrance to a building through a window, said security device comprising:

a security grill for positioning on the exterior of said building;

first and second pairs posts extending perpendicularly from said grill, said first pair of said posts being of sufficient length to extend to the interior of said building and including an opening at the distal end thereof;

at least four guide means mountable around said window for receiving said first and second pairs of posts, at least two of said guide means including spring means biased against said second pair of posts when said posts are received in said guide means; and

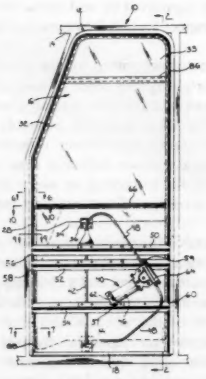
a pair of actuable latch means, each for being mounted in the interior of said building at a position to engage a different one of said openings for maintaining said device in a fixed position protecting said window and each being actuable to be disengaged from said openings simultaneously to permit the automatic release of said device from said window.

5,007,201

DOOR CONSTRUCTION

Terence P. D'Hoore, Mishawaka, Ind., and Mark L. Smith, Niles, Mich., assignors to Excel Industries, Inc., Elkhart, Ind.

Filed Apr. 4, 1990, Ser. No. 504,390
Int. Cl.[5] E05F *11/38*
U.S. Cl. 49—348 **6 Claims**



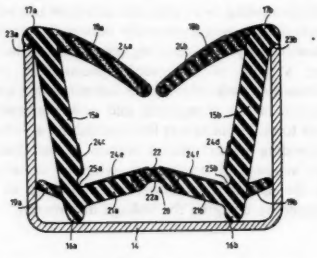
1. In a door construction including a peripheral door frame defining opposite sides, cover panel secured to said door frame, said door frame including means for housing a reciprocative window, and means for shifting said window between up and down positions, the improvement wherein said door frame defines a groove running substantially the length of said frame, mounting braces, carrying side means for shifting, said mounting braces spanning said door frames, said mounting braces connected to said frame sides by fasteners extending through the mounting braces and seated in said groove, a channel oriented transverse with respect to said groove, an outer door panel seated in said channel.

5,007,202

SEALING SLIDEWAY FOR A MOVING SHEET, AND IN PARTICULAR FOR A MOTOR VEHICLE WINDOW

Henri Guillon, Vaux-Sur-Seine, France, assignor to Hutchinson, Paris, France

Filed Feb. 24, 1989, Ser. No. 315,301
Claims priority, application France, Feb. 26, 1988, 88 02370
Int. Cl.[5] E06B *7/16*; F16J *15/22*
U.S. Cl. 49—441 **11 Claims**



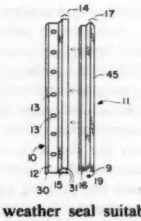
1. A guiding slideway for a moving sheet, the slideway comprising two sealing lips connected to two side flanges which are interconnected by a traverse web, wherein said web comprises first and second webs connected to each other at a first end of each web and respectively connected to said side flanges at a second end of each web, said pair of webs forming at their junction an angle projecting towards said lips when the slideway is not locked into a run channel, and forming an angle projecting away from said lips when the slideway is locked into a run channel, wherein the sum of the lengths of said first and second webs is greater than the space allowed for the web within the run channel, whereby the slideway is locked within the run channel by a toggle action when inserted therein.

5,007,203

REPLACEABLE WEATHER SEAL

Matthew M. Katrynuik, 958 St. Matthews Avenue, Winnipeg, Manitoba, Canada R3G 0J6

Filed Mar. 15, 1990, Ser. No. 493,623
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—493 **7 Claims**



1. A replaceable weather seal suitable for attaching to a frame with screws, which is comprised of:

(a) foam, which along its entire length has a first portion that

is thicker than its second portion, a second portion that is substantially flat, and a third portion that extends vertically up from the second portion and then curves downwardly,

(b) an insert of approximately the same length as the foam, which insert is made of a non-deformable material, wherein a first portion and a third portion of the entire length of said insert is raised relative to its second portion, and its second portion is relatively flat;

(c) a cover that is made of a water and tear resistant material;

(d) wherein said insert is placed beneath the foam such that the first portion of the foam lies above the first portion of the insert, the second portion of the foam lies above the second portion of the insert and the vertically extending part of the third portion of the foam lies above the third portion of the insert, the cover is then sealingly attached around the foam and insert in such a manner that it closely conforms to the shape defined by the foam and insert, thereby forming a weather sealing member which is comprised of the covered foam and insert; and

(e) a carrier that is substantially flat along a first portion of its entire length and approximately "U"-shaped along a second portion of its entire length, wherein the approximately "U"-shaped portion is constructed so that its outside side portion defines an open slit along the entire length of the carrier into which the first and second portions of the weather sealing member holdingly fit and within which the weather sealing member is held when the replaceable weather seal is in use.

5,007,204

APPARATUS FOR SHAPING INGOTS INTO RIGHT CIRCULAR CYLINDRICAL FORM

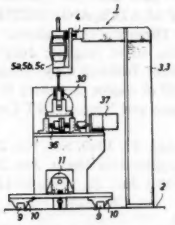
Hiroyuki Ibe, and Takashi Mori, both of Fukui, Japan, assignors to Shin-Etsu Handotai Company Limited, Tokyo, Japan

Filed Sep. 14, 1989, Ser. No. 407,482

Claims priority, application Japan, Sep. 16, 1988, 63-230111; Nov. 10, 1988, 63-282558

Int. Cl.[5] B24B *49/00*

U.S. Cl. 51—165.77 **4 Claims**



2. An apparatus for shaping monocrystal ingots of roughly circular cylindrical form into exact right circular cylindrical form comprising:

(i) an automatic center axis determining unit having

a support means for supporting the ingot,

a measure means for dimensionally measuring a plurality of cross sections taken normally to a roughly presupposed axis of the ingot,

a compute means for computing the location of a center of each of the cross sections based on the dimensional information of the cross sections obtained from said measure means and determining the optimum center axis based on the location of the thus obtained centers of the cross sections, and

a mark means for visibly marking the points at which the determined optimum center axis passes through the end faces of the ingot;

(ii) an automatic external cylindrical grinding unit;

(iii) an ingot setting unit having

a chuck means for chucking the marked ingot,

a monitor means for monitoring the points marked by the mark means,

an align means for aligning the marked points of the ingot monitored by said monitor means with the spin center line of said external cylindrical grinding unit, and

a convey means for conveying the ingot into the grinding position of said external cylindrical grinding unit; and

(iv) an automatic diameter control unit having

a diameter measure means for measuring a local diameter of the ingot without coming in contact with the ingot and in a real-time manner;

an arithmetic process means for comparing the value of the measured diameter received from the diameter measure means with a predetermined reference value, and for generating a control signal in response to the result of the comparison; and

a grinder control means for controlling the grinder to determine its grinding depth in response to the control signal from the arithmetic process means.

5,007,205

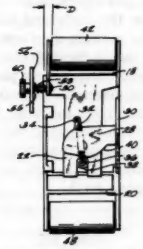
TENSIONER RELEASE AND MECHANISM FOR BELT SANDERS

Joseph G. Farmerie, New Berlin, Wis., assignor to Milwaukee Electric Tool Corporation, Brookfield, Wis.

Filed Jun. 27, 1988, Ser. No. 211,866

Int. Cl.[5] B24B *23/06*

U.S. Cl. 51—170 EB **6 Claims**



1. A belt sander comprising,

a base,

a rear roller mounted on said base,

a yoke mounted on said base for reciprocable motion,

a front roller mounted on said yoke for movement farther from or closer to said rear roller to tension or relieve tension of a sanding belt mounted on the rollers,

cam means rotatably mounted on said base operatively engaging said yoke for moving said yoke from or towards said rear roller,

spring means connected to said yoke and said cam means and operative to bias said front roller against a sanding belt mounted on said rollers when said cam means is in its normal position, said cam means being out of contact with said yoke when said cam means is in its said normal position,

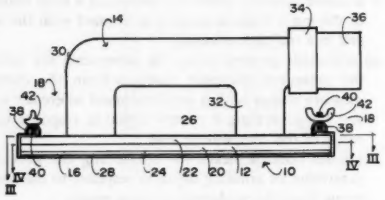
and means rendering the force of said spring means ineffective at some point in movement of said cam means from said normal position to a release position in which said front roller has moved closer to said rear roller to enable removal of said sanding belt.

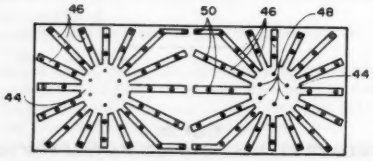
5,007,206

DUSTLESS DRYWALL SANDER

Patrick J. Paterson, Box 354, Ile Des Chene, Manitoba, Canada R0A 0T0

Filed Oct. 5, 1989, Ser. No. 417,455
Int. Cl.[5] B24B *23/00*
U.S. Cl. 51—170 R 15 Claims





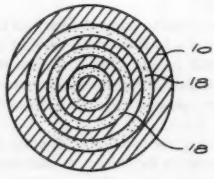
1. A sanding apparatus comprising:
a body with a flat front face and a rear face;
vacuum passage means in the body;
a plurality of spaced apart inlet openings through the front face of the body, communicating with the vacuum passage means;
at least one exhaust opening in the body, communicating with the vacuum passage means;
a handle secured to the body and having a vacuum duct therethrough, the vacuum duct communicating with the vacuum passage means through the exhaust opening:
a flexible sanding pad comprising a plurality of layers of an open mesh screen material, the pad being unattached to and removably overlying the front face of the body;
a porous abrasive mesh overlying the sanding pad; and
clamp means for clamping the abrasive mesh to the body whereby the sanding pad is held on the front face of the body by the abrasive mesh.

5,007,207

ABRASIVE PRODUCT

Cornelius Phaal, Glade Cottage, St Anne's Glade, Bagshot, Surrey, GU195EF, England

Filed Dec. 13, 1988, Ser. No. 283,620
Claims priority, application South Africa, Dec. 22, 1987, 87/9598
Int. Cl.[5] B23F *21/03*
U.S. Cl. 51—204 2 Claims



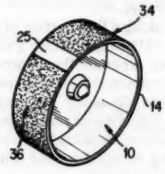
1. A tool insert comprising a disc-shaped abrasive compact having major flat surfaces on each of opposite sides thereof, at least a part of the periphery of one of the major flat surfaces providing a cutting edge for the insert, a cemented carbide support bonded to the other major flat surface, at least one curved recess located behind the cutting edge and extending into the cemented carbide support from the compact and carbide interface and containing abrasive compact material, said recess having the form of a spiral radiating out from the center of the abrasive compact.

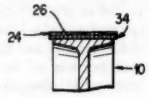
5,007,208

ANCHOR FOR ROTARY SANDING DRUM

Theodore F. Garfield, Sunset La., Harrison, N.Y. 10528

Filed Jun. 22, 1989, Ser. No. 369,981
Int. Cl.[5] B24B *1/00, 7/19, 7/30*
U.S. Cl. 51—281 R 8 Claims





1. A method for preventing axial slippage, during utilization, of a closed loop sanding belt mounted on a rotating circular drum, comprised of a resilient material; said method comprising the steps of: (a) positioning an elongated strip of sandpaper on the outer surface of said drum, with sandpaper grit of said strip facing outwardly away from said drum; and (b) placing said closed loop sanding belt directly on said strip and in contact with the sandpaper grit thereof; and wherein the length of said strip is less than the outer circumference of said drum.

5,007,209

OPTICAL FIBER CONNECTOR POLISHING APPARATUS AND METHOD

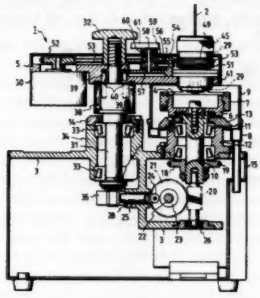
Kazuharu Saito; Hiroyasu Matsukura; Hiroshi Komase; Haruhiro Tsuneda, all of Nagano; Junji Watanabe, Tokyo; Tadao Saito, Tokyo; Toshiroh Doy, Tokyo, and Kazuo Matsunaga, Tokyo, all of Japan, assignors to K.K. Sankyo Seiki Seisakusho, Nagano and Nippon T&T Corp., Tokyo, both of, Japan

Filed Jan. 13, 1989, Ser. No. 296,729
Claims priority, application Japan, Jun. 26, 1987, 62-159126; Jan. 14, 1988, 63-6483; Jan. 22, 1988, 63-12157
Int. Cl.[5] B24B *19/00*
U.S. Cl. 51—283 R 8 Claims

1. An optical fiber connector polishing apparatus comprising:
a chuck for supporting an optical fiber connector in such a manner that said optical fiber connector is rotatable in a clockwise/counterclockwise reciprocation mode;
a swing arm which holds said chuck to swing said chuck, in a horizontal plane, between a first fixed position and a second fixed position;
a reciprocating rotatable motor provided on said swing arm for rotating said chuck in said clockwise/counterclockwise reciprocation mode;
positioning means for positioning said swing arm selectively at said first or second fixed position on a swing locus thereof;
polishing means including a polishing element and rotation means for rotating said polishing element at high speed;
swinging means for swinging said swing arm in a horizontal plane in such a manner that the end of said optical

fiber connector swings along a radial direction of the circular rotation of said polishing element and within a radial length thereof continuously while an end portion of said optical fiber connector is being polished with said polishing element; and

a reference member for positioning said end portion of said optical fiber connector at a reference position with



respect to said chuck, such that said optical fiber connector will be polished to a predetermined length when a polishing operation is conducted with said polishing means,

said polishing element being arranged at said first fixed position and said reference member being arranged at said second fixed position of said swing arm, respectively

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5,007,210

DEVICE CAPABLE OF SUCTION-ADHERING TO A WALL SURFACE AND MOVING THEREALONG

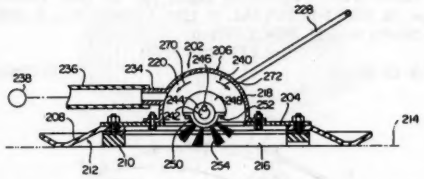
Fukashi Urakami, 5-21-204 Konandai 4-chome, Konan-Ku, Yokohama, Japan

Division of Ser. No. 171,123, Mar. 21, 1988, Pat. No. 4,934,475. This application Apr. 25, 1990, Ser. No. 514,148

Claims priority, application Japan, Apr. 4, 1987, 62-83431; Apr. 27, 1987, 62-103744; Jun. 1, 1987, 62-137887; Mar. 3, 1988, 63-48683

Int. Cl.[5] B24C *3/06;* **B24B** *23/00*

U.S. Cl. 51—429 **6 Claims**



1. A device for moving along a wall surface, said device comprising a main body and vibration generating means mounted on the main body, means for providing a holding force for holding the device against the wall surface, said vibration generating mean being adapted to impart a lifting force in a direction away from a wall surface to reduce the holding force, said vibration generating means also imparting a force in a predetermined direction along the wall surface to the main body by the vibration it generates, and consequently to move the main body in said predetermined direction along the wall surface, said vibration generating means including an eccentric weight means secured to a rotating shaft mounted rotatably on the main body of the device, said force in a direction away from the wall surface, and said force in the predetermined direction along the wall surface being imparted by the rotating of the eccentric weight means.

5,007,211

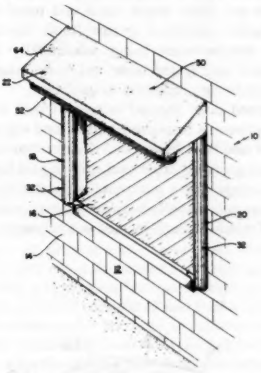
INFLATABLE DOCK SEAL

Wilfred P. Ouellet, Cranston, R.I., assignor to L.K. Goodwin Co., Inc., Providence, R.I.

Filed Mar. 16, 1990, Ser. No. 495,285

Int. Cl.[5] E04B *1/34*

U.S. Cl. 52—2.12 **14 Claims**



1. In an inflatable dock seal for a loading dock opening in a building wall, said opening having opposite side extremities and a top extremity extending between said side extremities, said dock seal including a pair of opposite side seal sections securable to said wall adjacent opposite side extremities of said opening, a top seal section securable to said wall adjacent the top extremity of said opening so that said top seal section extends between said side seal sections, each of said side seal sections and said top seal section including an inflatable portion which is inflatable to an expanded disposition and retractable to a collapsed disposition, means for inflating said inflatable portions to the expanded dispositions thereof and means for retracting said inflatable portions to the collapsed dispositions thereof upon deactuation of said inflating means, the improvement comprising said retracting means comprising substantially constant force resilient spring means for retracting at least a portion of said inflatable portions, said resilient spring means applying substantially constant, uniform retracting forces to said portion of said inflatable portions as said inflatable portions are moved between the collapsed and the expanded dispositions thereof.

5,007,212

INFLATABLE SHELTER

Monty Fritts, 1006 S. Elm, and Darren J. Myers, Rt. 4, Box 99, both of Ottawa, Kans. 66067

Filed Mar. 21, 1990, Ser. No. 496,870

Int. Cl.[5] E04H *15/00*

U.S. Cl. 52—2.18 **2 Claims**

1. A shelter comprising:

(a) a circular floor made from a flexible, water-resistant material and including a perimeter;

(b) an inflatable, annular, cross-sectionally tubular base frame with an inner edge, an outer edge, a base frame top and a base frame bottom, said base frame surrounding said floor and being fixedly attached at said base frame bottom to said floor perimeter;

(c) a plurality of inflatable, arcuate, cross-sectionally tubular support ribs each having a rib inner edge, a rib outer edge, opposite rib side edges, a rib lower end and a rib upper

end, each said rib at its lower end being attached to said base frame top and generally centered on said base frame;

(d) said ribs and said base frame comprising a flexible, air-impervious material;

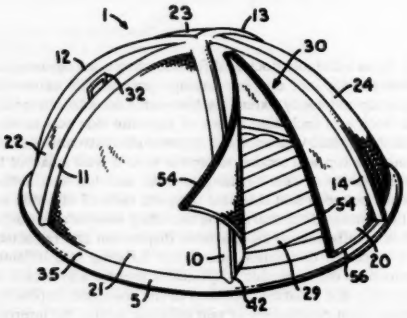
(e) an apex;

(f) said ribs terminating at their upper ends at said apex;

(g) a wall comprising a plurality of flexible, water-resistant wall panels each having opposite side edges, a top and a lower edge, each said side panel being fixedly and integrally connected at its side edges to a respective adjacent pair of support ribs, each said side edge being substantially centered at its connection to a respective rib between said rib inner and outer edges, each said panel bottom edge being fixedly connected to base frame top and said connection therebetween being substantially centered between said base frame inner and outer edges, said wall panel tops being connected to said apex;

(h) a zippered door located in one of said wall covering panels between a respective pair of said support ribs, said apex and said base frame, said door comprising a first slit extending generally from said apex to said base frame and further comprising a horizontal slit extending along said base frame substantially between a respective pair of ribs;

(i) a pair of windows each located in a respective wall covering panel and including a pane of flexible, transparent material and a window frame connecting said window pane to said wall panel;



(j) a mattress including an inflatable annular, cross-sectionally tubular mattress frame with an inner edge, an outer edge, a top and a bottom, said mattress frame being positioned within and retained by said base frame with said mattress frame outer edge frictionally engaging said base frame inner edge and said mattress frame bottom resting on said floor, said mattress further including a plurality of elongated, juxtaposed, inflatable tubes with diameters approximately equal to a diameter of said mattress frame, said inflatable tubes extending across said mattress frame in substantially coplanar relationship with said mattress frame, each said tube including opposite ends fixedly connected to said mattress frame at said mattress frame inner edge, said elongated mattress tubes resting on said floor;

(k) said base frame including an air chamber;

(l) each said support rib having an air chamber;

(m) said mattress having a pneumatically discrete air chamber;

(n) said rib upper ends being fluidically interconnected at said apex and said ribs being fluidically interconnected with said base frame at their lower ends.

5,007,213

LOCK SYSTEM FOR PASSING OBJECTS FROM A RADIOACTIVELY CONTAMINATED CHAMBER INTO A CONTAINER

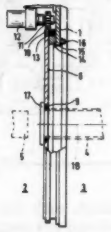
Burkart Schulte, Minden; Hakan Sterner, Hanover; Gerhard Wetzka, Veitshöchheim, and Norbert Hardt, Hanover, all of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

Filed Sep. 18, 1989, Ser. No. 408,545

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1988, 3831775

Int. Cl.[5] E06B *5/00*

U.S. Cl. 52—29 **6 Claims**



1. A lock system for passing objects from a contaminated first chamber through the lock system and into a container disposed in a contamination-free second chamber wherein the container can be docked at the lock system, the two chambers being separated by a partition wall, the lock system comprising:

opening means formed in said partition wall;

a disc defining a center point and being rotatably mounted in said opening means for rotation about an axis passing through said center point; and,

a plurality of lock openings formed in said disc and arranged therein along an imaginary circle concentric to said center point.

5,007,214

OPENABLE DOME-SHAPED ROOF STRUCTURE

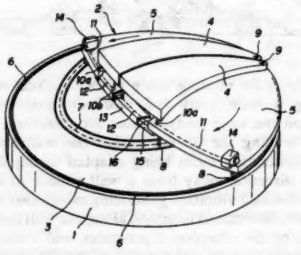
Takashi Itami; Tadao Yuri, both of Tokyo, and Toru Aoyagi, Chofu, all of Japan, assignors to Ohbayashi Corporation, Osaka, Japan

Filed Apr. 5, 1990, Ser. No. 504,906

Claims priority, application Japan, Apr. 10, 1989, 1-88085; Apr. 28, 1989, 1-107757; Oct. 19, 1989, 1-270427; Nov. 9, 1989, 1-290096; Nov. 17, 1989, 1-297510

Int. Cl.[5] E04B *1/346*

U.S. Cl. 52—66 **10 Claims**



1. An openable dome-shaped roof structure comprising:

a peripheral side wall;

a first slide guide means provided upon said side wall along a circle;

a crescent-shaped fixed roof section having an arc-shaped outer periphery fixedly supported by said side wall and an arc-shaped inner periphery;

a second slide guide means provided upon said fixed roof section along a circular arc which is concentric with said circle;

a pair of slidable roof sections provided above the level of said fixed roof section and symmetrically arranged relative to a first diametral line of said circle, which line divides said slidable roof sections into equal two parts, said slidable roof sections meeting with each other at a first point where said diametral line intersects with said circle at the opposite side of said fixed roof section, each said slidable roof section being defined by an outer arc portion extending along said circle from said first point to a respective second point where said arc-shaped outer and inner peripheries of said fixed roof section meet with each other, an inner arc portion extending along said arc-shaped inner periphery of said fixed roof section from said second point to a third point where said second slide guide means terminates, and a substantially linear portion extending from said first point to said third point;

a third slide guide means provided upon each said slidable roof section along and near said inner arc portion thereof;

a pair of pivotable roof sections symmetrically arranged relative to said diametral line in such a manner that said pivotable roof sections close a space of a dome-shaped roof not covered by said fixed roof section and said slidable roof sections, each said pivotable roof section being provided above the level of a respective said slidable roof section and pivotably connected thereto at a position adjacent said first point;

means for pivotably moving said pivotable roof sections upon said slidable roof sections along said third slide guide means; and

means for slidably moving said slidable roof sections upon said fixed roof section along said first and second slide guide means.

5,007,215

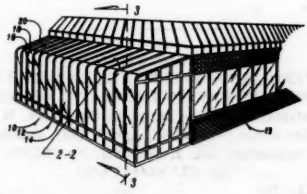
SUNROOM

Mearl Minter, Oskaloosa, Iowa, assignor to Rolscreen Company, Pella, Iowa

Filed Apr. 24, 1989, Ser. No. 342,094

Int. Cl.[5] E04B 7/02; E04C 3/18; E04D 1/36

U.S. Cl. 52—90 **19 Claims**



1. A sunroom comprising,

a frame support structure including a roof having support beams, said beams being elevated at one end and extending downwardly at the other end,

each of said beams having top and bottom sides and being constructed of wood and including a channel shaped top side extending longitudinally of said beam for receiving water, and

a pair of spaced apart metal reinforcement plates extending the substantial length and longitudinally of said beams in the bottom of said channel and fixedly secured to said beam whereby water received in said channel is adapted to run operatively over said plates to the other end of said beam.

5,007,216

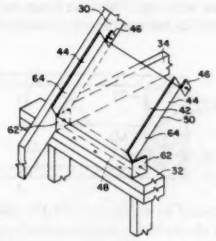
VENTILATION BAFFLE AND INSULATION STOP

David H. Pearson, 1350-13 Ave. SE., Salmon Arm B.C., Canada V1E 2G7

Filed Jul. 18, 1989, Ser. No. 381,471

Int. Cl.[5] E04B 1/74; F24F 7/00

U.S. Cl. 52—94 **5 Claims**



1. A baffle for use in a house having an attic defined by:

(a) a vertical exterior wall having a horizontal top wall plate;

(b) parallel floor joists supported by said top wall plate; and

(c) spaced apart, inclined roof rafters securely connected to said top wall plate and said floor joists, said roof rafters having a roof covering fastened on their upper surface;

said attic having a vent around its outer periphery between said top wall plate and the underside of said roof covering enabling the flow of ventilating air between an exterior soffit and insulating material installed between said floor joists in the interior of said attic, wherein said baffle is installable between adjacent roof rafters to block the flow of ventilating air through said insulating material, said baffle having:

(d) a rectangular panel;

(e) a bottom flap hingedly connected to said rectangular panel along a first fold line and attachable to said wall plate;

(f) first and second side flaps hingedly connected along second and third fold lines on opposed sides of said rectangular panel, said side flaps being attachable to the inner face of said roof rafters; and

(g) a top flap hingedly connected along a fourth fold line to said rectangular panel and provided at either end thereof with a hingedly connected flap adapted to be secured to said inner face of said roof rafters;

wherein said first and second side flaps are provided with a plurality of printed lines perpendicular to said second and third fold lines and dividing said flaps into first and second sections of variable relative lengths, the length of said second section being chosen according to the distance between said wall plate and said underside of said roof, and scored lines provided on said second section parallel to said second and third fold lines for selectively varying the width of said second section and thereby adjust the width of said rectangular panel to different rafter spacings.

5,007,217

MULTIPLE PANE SEALED GLAZING UNIT

Michael Glover, and Gerhard Reichert, both of Ottawa, Canada, assignors to Lauren Manufacturing Company, New Philadelphia, Ohio

Continuation of Ser. No. 117,094, Nov. 5, 1987, abandoned, which is a continuation-in-part of Ser. No. 909,947, Sep. 22, 1986, abandoned. This application Apr. 10, 1989, Ser. No. 338,054

Claims priority, application Canada, Sep. 21, 1987, 547355

The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.

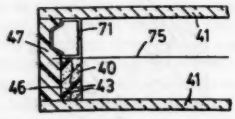
Int. Cl.[5] E06B 7/12; E04C 2/54

U.S. Cl. 52—172 **7 Claims**

1. A multiple plane insulating sealed glazing unit comprising two or more glazing sheets, said sheets being maintained in an

essentially parallel and spaced apart relationship to each other by a peripheral resilient spacing and sealing assembly, defining an insulating airspace between said sheets, which spacing and sealing assembly comprises an inner spacer strip sandwiched between said sheets, and located inwardly of the glazing edges, thereby creating an outwardly facing perimeter channel therebetween;

said inner spacer strip being composed of a moisture permeable flexible or semi-rigid silicone foam material preformed to have, when in the uncompressed condition, two opposite sides spaced so as to provide the desired spacing of said glazing sheets and containing desiccant material, said spacer strip having a preapplied ultra-violet resistant pressure sensitive adhesive on said opposite sides thereof and which abut said sheets, said adhesive having high tack and non-outgassing properties and said spacer strip having an inwardly directed face which is resistant to ultra-violet radiation, and having physical properties which permit said spacer strip to be coiled for storage; and



said spacing and sealing assembly further comprising an outer sealant filling said outer perimeter channel.

5,007,218

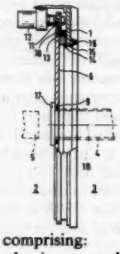
MASONRY BLOCK WALL SYSTEM AND METHOD

Fred G. Bengtson, Tempe, and Donald V. LoPiccolo, Phoenix, both of Ariz., assignors to Superlite Builders Supply, Inc., Phoenix, Ariz.

Continuation of Ser. No. 599,526, Apr. 12, 1984, abandoned. This application Oct. 14, 1986, Ser. No. 918,465

Int. Cl.[5] E04B *1/06*; E06B *1/04*

U.S. Cl. 52—204 **2 Claims**



1. A wall structure comprising:

(a) a concrete footer having an anchoring means therein;

(b) a plurality of post-tensioning rods connected to said anchoring means and extending vertically from said footer;

(c) a plurality of stacked masonry building blocks arranged in courses with mortar therebetween and having voids therein;

(d) a plate positioned on the top course of said blocks;

(e) said rods extending through said voids in non-contacting relationship to said blocks, grouting or other masonry products and through said plate;

(f) tensioning means mounted on said plate and secured to said post-tensioning rods for maintaining a predetermined tension in said rods;

(g) said masonry building blocks each having opposing parallel faces interconnected by a single web member;

(h) means defining thermal insulation material in said voids to increase the thermal resistance of said wall structure to provide a wall structure having an R value greater than 10; and

(i) a steel lintel member extending over an opening provided in said wall structure, said lintel including a plurality of vertically extending rods connected thereto, each of said rods extending through voids in said blocks positioned above said lintel.

5,007,219

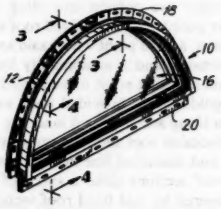
ROUND TOP WINDOW

Bertram Sayer, Princeton, N.J., assignor to 501 Thermal Profiles, Inc., Keasbey, N.J.

Filed Feb. 11, 1988, Ser. No. 154,896

Int. Cl.[5] E06B *1/26*

U.S. Cl. 52—204 **18 Claims**



1. A round top window frame comprising

a first individually formed flexible elongated member having a first end and a second end, with said first elongated member having a curved configuration,

a second individually formed elongated member having a first end and a second end, with said second elongated member shorter than said first elongated member,

first attachment means for attaching said first end of said first elongated member and said first end of said second elongated member,

second attachment means for attaching said second end of said first elongated member to said second end of said second elongated member,

a first stop member,

first stop member attachment means for attaching said first stop member and said first elongated member,

a second stop member, and

second stop member attachment means for attaching said second stop member and said second elongated member, with said first and second elongated members forming a frame.

5,007,220

NON-PERIODIC AND PERIODIC LAYERED SPACE FRAMES HAVING PRISMATIC NODES

Haresh Lalvani, 92 Horatio St., #3M, New York, N.Y. 10014

Continuation of Ser. No. 36,395, Apr. 9, 1987, abandoned. This application Dec. 2, 1988, Ser. No. 282,991

Int. Cl.[5] E04H *12/00*

U.S. Cl. 52—311 **22 Claims**

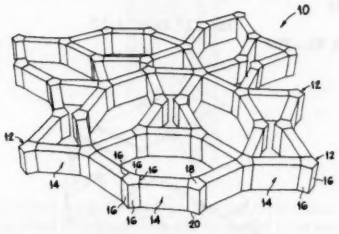
1. A space frame, the combination comprising:

a plurality of prismatic nodes arranged in a first spaced, non-periodic, planar array, each of said prismatic nodes having a substantially continuous outer surface comprising a top surface and a bottom surface, each being identical regular polygons with p-sides, and p-side surfaces having opposite edges,

each of said side surfaces being coupled to said top and bottom surfaces, and each opposite edge of each of said side surfaces being coupled to a respective opposite edge of an adjoining side surface;

a plurality of struts of substantially equal length located in the same plane as said planar array of prismatic nodes, each of said struts having opposite ends; and

means, coupled to each of said struts and each of said prismatic nodes, for coupling the opposite ends of each strut to two adjacent prismatic nodes to form at least one set of identical polygonal areas bounded by said struts and nodes, thereby forming a continuous space frame having a pattern defined by said polygonal areas that does not repeat and does not have translational symmetry,



wherein the angle between any given pair of struts connected to the same prismatic node is determined by the angle between the respective p-side surfaces to which the struts are coupled, and

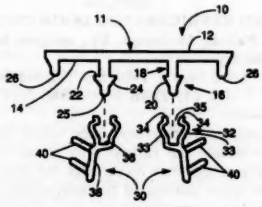
wherein p is selected from the group consisting of the odd numbers greater than three and the even numbers greater than six.

5,007,221

SNAP-IN GLAZING POCKET FILLER

Thomas E. Matthews, Lilburn, and Charles P. Touton, Roswell, both of Ga., assignors to Kawneer Company, Inc., Norcross, Ga.

Filed Feb. 23, 1990, Ser. No. 484,171
Int. Cl.[5] E04C *3/00*; E04D *1/36*
U.S. Cl. 52—464 **11 Claims**



1. A snap-in glazing pocket filler for use with a structural frame member having walls defining a glazing pocket, comprising:

an elongated metal plate having a rear face and having a width sufficient to cover said glazing pocket, said elongated plate having a pair of flanges projecting rearwardly from said rear face thereof; and

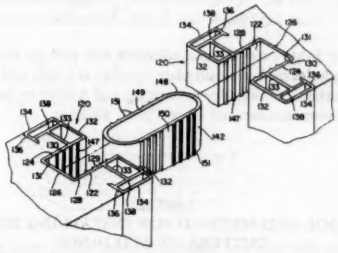
a pair of plastic retaining legs having corresponding snap-on sockets formed thereon for engaging said rearwardly projecting flanges on said rear face of said elongated plate to fasten said plastic retaining legs to said plate, said retaining legs extending rearwardly and outwardly of said plate to engage said walls defining said glazing pocket.

5,007,222

FOAMED BUILDING PANEL INCLUDING AN INTERNALLY MOUNTED STUD

Harry W. Raymond, 203 Richey St., P.O. Box 395, Lock Haven, Pa. 17745

Continuation-in-part of Ser. No. 273,760, Nov. 14, 1988, Pat. No. 4,862,660, which is a continuation of Ser. No. 72,718, Jul. 13, 1987, abandoned. This application Jun. 23, 1989, Ser. No. 370,988
Int. Cl.[5] E04B *1/76, 2/00*; E04C *2/34, 2/26*
U.S. Cl. 35—586 **12 Claims**



1. A structural column assembly for use as a structural support element to join two modular wall units together end-to-end, each of said wall units having an exterior surface and an interior surface, said column assembly comprising:

first and second end columns, each of said end columns having a pair of opposed planar side walls having a distal end and a proximal end and a planar end wall joining said proximal ends of each of said pairs of side walls into a generally U-shaped member, each of said pairs of side walls being arranged to be generally parallel with the exterior and interior surfaces of said wall units, each of said planar side walls having an inside face and an outside face, each of said outside faces having a primary leg extending outwardly from said distal end, said primary leg defining an elongated planar wall generally perpendicular to said outside face and having a termination at a predetermined transverse distance from said outside face, a planar outside vertical strip positioned at said termination of said primary leg generally parallel to said outside face along the full length of said end column and having a free end, said planar strip terminating along said free end in an inwardly directed finger, and a planar inside vertical strip positioned generally parallel and spaced from said planar outside vertical strip joining said primary leg to said finger, said end columns defining an interior space when said planar walls defined by said primary legs are placed into intimate contact with each other; and

insert means for insertion into said interior space for securing said end columns to each other.

5,007,223

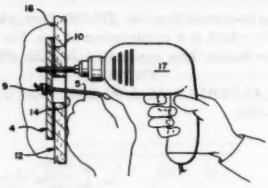
BLIND ANCHORING OF WALL FIXTURES

Andrew P. Holland, 4100 Rosemary St., Chevy Chase, Md. 20815

Filed Feb. 20, 1990, Ser. No. 481,323
Int. Cl.[5] E04B *1/00*
U.S. Cl. 52—741 **8 Claims**

1. A method of blind anchoring for mounting a screw-securable fixture on a dry wall panel having an inaccessible inner surface, comprising marking on the panel in a selected location positions of any screw holes in a base flange of said fixture, cutting an opening through said panel inside said hole markings, inserting through said opening a longitudinally elongated stiff machinable plate member trailing a strong flexible string extending substantially centrally through and beyond a back of said member and having on a trailing side thereof a self-sticking adhesive coating, manipulating said plate member through

said opening into position to back said hole markings, pulling said plate member by said string to adhere the adhesive coating to said inner surface of said panel, and, while holding said plate



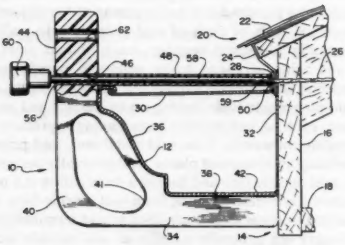
member in position by said adhesive and pull on said string, drilling holes in situ in said plate member through said panel in said marked positions for anchoring said fixture on said panel by screw means secured to said plate member.

5,007,224

TOOL AND METHOD FOR INSTALLING ROOF GUTTERS ON BUILDINGS

Carl L. Segneri, 16054 University Ave., South Holland, Ill. 60473

Filed Apr. 26, 1990, Ser. No. 514,749
Int. Cl.[5] B25C *1/02*
U.S. Cl. 52—741 **13 Claims**



1. A gutter installation hand tool which comprises:

(a) means for temporarily positioning a gutter that is to be installed on a residence or other building in the desired place against the wall of the building by (i) providing support for the bottom wall of the gutter, and (ii) preventing the gutter from moving away from the building wall, all without any attachment of the gutter or the positioning means to the building;

(b) a piston positioned to contact, at its forward end, the head of a nail to drive the nail through at least one of the rear wall of the gutter and the rear portion of the associated hanger, and then into the building wall, when the piston is struck with a hammer on its other end; and

(c) means for holding and guiding (i) a nail to secure the gutter to the building, and (ii) said nail-driving piston while the piston is in contact with the head of the nail,

said tool being configured to be held in one of the user's hands to maintain said temporary positioning of the gutter,

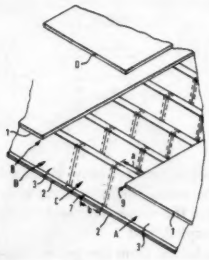
whereby the gutter may be temporarily maintained in place against the building wall by the tool held in one of the user's hands, and then at least partially secured to the building when the user strikes the free end of the nail-driving piston with a hammer held in the user's other hand to drive a nail positioned in the holding and guiding means through the rear wall of the gutter and/or the rear portion of the associated hanger, and then into the building wall.

5,007,225

CONSTRUCTION OF LARGE SANDWICH STRUCTURES

James A. Teasdale, Newcastle upon Tyne, England, assignor to British Shipbuilders, England

PCT No. PCT/GB86/00579, § 371 Date Jul. 21, 1987, § 102(e) Date Jul. 21, 1987, PCT Pub. No. WO87/02086, PCT Pub. Date Apr. 9, 1987
PCT Filed Sep. 29, 1986, Ser. No. 64,255
Claims priority, application United Kingdom, Sep. 27, 1985, 8523933
Int. Cl.[5] E04C *2/32*
U.S. Cl. 52—799 **4 Claims**



1. A composite structure having a metal panel comprising first and second parallel plates having opposing faces, a corrugated metal stiffener sandwiched between said plates and having a plurality of parallel corrugations defining peaks and troughs, each corrugation having an end, said first and second plates being secured to the peaks and troughs, respectively, of said stiffener by weld lines extending along the peaks and troughs, said panel being assembled to a like panel with the corrugations of both panels aligned end-to-end, with straight edges of said first plates opposing one another, and with straight edges of said second plates opposing one another: wherein said straight edge of each first plate extends parallel to and forwardly of a plane containing the ends of the corrugations of the respective panel, and said straight edge of each second plate extends parallel to and rearwardly of said plane, and (a) a butt weld joins said first plate edges (b) a corrugated insert piece is joined at each of said opposing faces by butt welds to the ends of the corrugations on the respective panels and (c) a plate insert is butt-welded at parallel edges thereof to said straight edges of said second plates.

5,007,226

INSULATED REFRIGERATOR DOOR CONSTRUCTION

Thomas E. Nelson, Anchorage, Ky., assignor to Soltech, Inc., Shelbyville, Ky.

Filed May 1, 1989, Ser. No. 345,967
Int. Cl.[5] E04B *1/78*; E04C *2/34*
U.S. Cl. 52—809 **4 Claims**

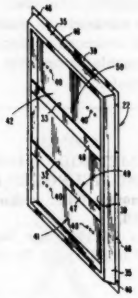
1. An insulated refrigerator door which is designed and arranged to enable the natural flow of air from the lower interior of the refrigerator up through the door insulation and back to the upper interior of the refrigerator, said insulated refrigerator door comprising:

an outer door panel;

an inner door panel defining therein a plurality of vent holes positioned in a series across the lower portion of said panel and a plurality of vent holes positioned in a series across the upper portion of said panel; and

an insulation panel disposed and filling the cavity between said inner and outer door panels and including a flexible permeable layer positioned adjacent to the interior surfaces of said inner and outer door panels, insulation material being disposed between said inner and outer panels and within said flexible permeable layer, said vent holes being designed and arranged for flow communication with said insulation material by way of said flexible per-

meable layer, wherein said insulation panel is arranged with a plurality of pouches constructed from material



comprising said flexible permeable layer, each pouch being filled with insulation and separated from each other by a seam.

5,007,227

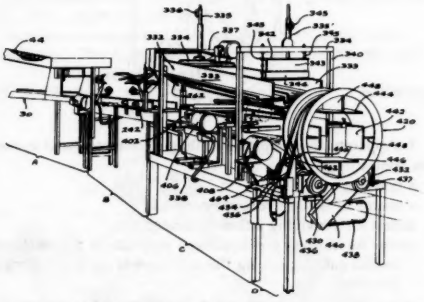
APPARTAUS AND METHOD FOR PACKAGING CITRUS FRUIT

Stanley McClusky, and Jerry L. Boyd, both of Bakersfield, Calif., assignors to McClusky Machinery Sales & Service, Edison, Calif.

Division of Ser. No. 260,437, Oct. 20, 1988, Pat. No. 4,907,396. This application Jan. 12, 1990, Ser. No. 465,999

Int. Cl.[5] B65B *61/00*

U.S. Cl. 53—243 **8 Claims**



1. In combination with an apparatus for packaging citrus fruit in a box the combination of:

a rotatable drum having means for receiving a box;

said box receiving means including side plates and top and bottom plates defining a box opening;

the longitudinal dimension of said plates being less than the axial dimension of said rotatable drum;

means for rotating said drum through 180° including a set of wheels engaged with said drum;

and means for causing said drum to pause in its rotation while a box inverted through 180° by said drum is pushed from said drum by a succeeding box.

5,007,228

ADJUSTABLE BOTTLE GRIPPER BELT

Kenneth Herzog, 135 Industrial Blvd., Riverhead, N.Y. 11901

Filed Nov. 8, 1989, Ser. No. 433,115

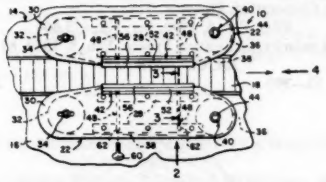
Int. Cl.[5] B65B *7/28;* **B67B** *3/20*

U.S. Cl. 53—282 **3 Claims**

1. Apparatus for gripping a container when being capped in a container filling and capping machine of the type having a table top with a conveyor for allowing the container to travel therealong and a capping mechanism disposed above the conveyor, said apparatus comprising at least two adjustable container gripper belt assemblies oppositely mounted on the table top adjacent the conveyor so that said assemblies can be adjusted to grip containers of various sizes that travel on the conveyor and prevent rotation of the container when a cap is rotatably mounted onto a threaded bottle neck of the container by the capping mechanism, wherein each of said adjustable container gripper belt assemblies includes:

(a) a pair of horizontally spaced apart stationary bars mounted above the table top in parallel relationship to the conveyor;

(b) a pair of elongated plates mounted on the bars in a sandwiched relationship above and below said bars;



(c) an idler pulley being adjustable and rotatably mounted between said plates at one side thereof;

(d) a drive pulley rotatably positioned between said plates at the other side thereof;

(e) a continuous flexible gripper belt extending about said idler pulley and said drive pulley;

(f) means for rotatably driving said drive pulley so that said gripper belt will move at same speed as the conveyor;

(g) means mounted on each said bar below the container top for horizontally adjusting said belt of each said assembly to individually engage with containers of varying size and shape.

5,007,229

METHOD OF WRAPPING UTILIZING A SELF ADHERING WRAPPING MATERIAL

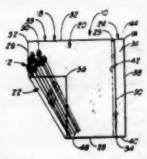
Donald E. Weder, Highland; William F. Straeter, Breese; Joseph G. Straeter, Highland, all of Ill.; Franklin J. Craig, Valley Park, Mo.; Wilma M. Donnelly, Highland, Ill., and Jack W. Redditt, Nashville, Tenn., assignors to Highland Supply Corporation, Highland, Ill.

Filed Jun. 20, 1989, Ser. No. 368,597

Continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, which is a continuation-in-part of Ser. No. 235,541, Aug. 11, 1988, Pat. No. 4,835,834, which is a continuation of Ser. No. 876,405, Jun. 20, 1986

Int. Cl.[5] B65B *11/56, 11/48*

U.S. Cl. 53—397 **56 Claims**



1. A method of wrapping at least a portion of an item, comprising:

providing a wrapping material comprising a sheet of material sufficiently sized to wrap at least a portion of the item, wherein the sheet of material comprises an upper surface and a lower surface; and a cling material secured to a portion of the sheet material, wherein the cling material is capable of connecting to the sheet of material and itself

upon contacting engagement and wherein the sheet of material with the cling material connected thereto is wrappable about the item whereby portions of the cling material contactingly engage and connect to portions of the wrapping material for generally securing the sheet of material wrapped about at least a portion of the item; and

wrapping the item by disposing the sheet of material about the item so that portions of the cling material contactingly engage and connect to portions of the wrapping material for generally securing the sheet of material about at least a portion of the item.

5,007,230

SAFE PACKAGING FOR DETONATING CORD

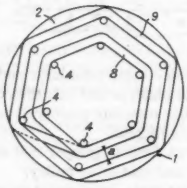
Didier Gaston, Kourou, Guyana, assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Feb. 6, 1990, Ser. No. 475,664

Claims priority, application France, Feb. 8, 1989, 89 01617

Int. Cl.[5] B65B *63/04*

U.S. Cl. 53—397 **2 Claims**



1. A method of packaging a detonating cord comprising explosive material contained in a sheath, said method comprising the step of winding the detonating cord on a support in such a manner that every portion of the detonating cord in the winding , is spaced apart from the nearest portions which are substantially parallel thereto by a distance (a) lying in a range between the distance below which detonation is transmissible from one portion to the nearest portion, and the distance beyond which said containing sheath is no longer destroyed by the detonation of a nearest portion.

5,007,231

CONTAINER

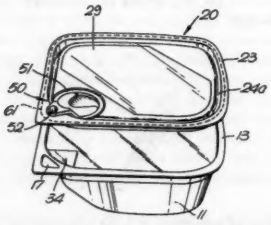
Ole Ingemann, Ryslinge, Denmark, assignor to PLM AB, Malmo, Sweden

Division of Ser. No. 46,048, Apr. 16, 1987, Pat. No. 4,795,055. This application Dec. 23, 1988, Ser. No. 289,385

Claims priority, application Sweden, Aug. 18, 1986, 8503830

Int. Cl.[5] B65B *7/28, 61/18*

U.S. Cl. 53—412 **10 Claims**



1. A method for sealing an open top of a container having a closed bottom and containing goods to be sealed against the ambient atmosphere, said method comprising

attaching a first lid to the open top of the container by a peelable connection so that the lid seals the contents in the container,

attaching a second lid to the container by a permanent sealed connection in a region outside the first lid to form a closed, sealed space between the lids, and

forming the second lid with a weakened portion surrounding said peelable connection between said first lid and the open top of the container to enable separation of said second lid at said weakened portion and provide access to said first lid to enable its removal to gain access to the contents in the container.

5,007,232

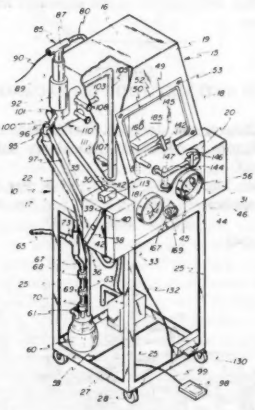
APPARATUS AND METHOD OF USE OF STERILIZING CONTAINERS USING HYDROGEN PEROXIDE VAPOR

Vance E. Caudill, Columbus, Ohio, assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Nov. 20, 1989, Ser. No. 439,130

Int. Cl.[5] B65B *55/06, 55/10, 31/02*

U.S. Cl. 53—426 **14 Claims**



1. Apparatus for aseptically filling a container, said apparatus comprising:

a housing,

a source of liquid hydrogen peroxide,

means for providing a flow of heated gas,

means for causing said hydrogen peroxide to mix with said heated gas, the mixing thereby vaporizing said hydrogen peroxide,

means inside said housing for dispensing the vaporized hydrogen peroxide, said means for dispensing said vaporized hydrogen peroxide including means for dispensing said vaporized hydrogen peroxide into said container,

fill tube means extending into said housing for dispensing product into said container,

means within said housing for sealing said container, and

means providing for the passage of said container between the interior and the exterior of said housing.

5,007,233

MULTIWALL BAG AND METHOD OF PACKAGING UTILIZING MULTIWALL BAGS

Ajit K. Bose, Lawrenceville, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Filed Aug. 31, 1989, Ser. No. 401,336

Int. Cl.[5] B65B *7/06*

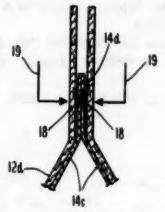
U.S. Cl. 53—449 **10 Claims**

1. A method of packaging bulk material in a multiwall bag which includes a ply of uncoated paper which provides an inner surface, comprising the steps of:

providing a thermoplastic bag, said thermoplastic bag having a top inner surface;

inserting said thermoplastic bag within the multiwall bag, wherein an outer surface of said thermoplastic bag substantially contiguously contacts the inner surface of said ply of uncoated paper;

substantially filling said thermoplastic bag with the bulk material;



ultrasonically sealing the top inner surface of said thermoplastic bag filled with the bulk material through the walls of the multiwall bag and forming a seal between said multiwall bag and said thermoplastic bag that is weaker than the seal of the inner surfaces of said thermoplastic bag; and

closing said multiwall bag.

5,007,234

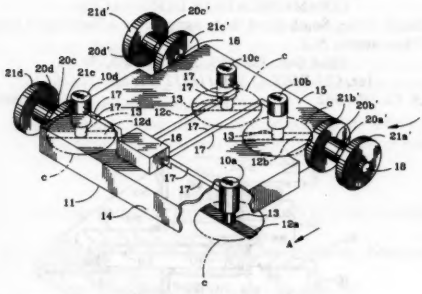
AUTOMATIC SELF-GUIDING LAWN MOWER AND MOWING METHOD

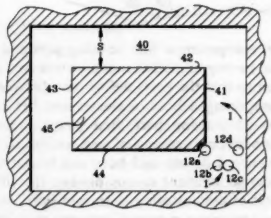
Darlene M. Shurman, 609 16th St., NW.; Gerald L. Shurman, 1221 Cleveland Ave., NW., and Louis W. Shurman, 316 15th St., NW., all of, Canton, Ohio 44703

Continuation-in-part of Ser. No. 441,628, Nov. 27, 1989, abandoned. This application Aug. 15, 1990, Ser. No. 568,221

Int. Cl.[5] A01D *34/78, 69/02*

U.S. Cl. 56—10.2 **16 Claims**





13. A method of mowing a lawn with an automatic self-guiding lawn mower having at least first and second motor means for driving operatively connected blade means and wheel means, respectively, for cutting the lawn and moving the mower, including the steps of:

(a) manually cutting a border around the lawn;

(b) positioning the mower adjacent to a peripheral edge of an uncut area of the lawn;

(c) actuating the first motor means for driving the operatively connected blade means;

(d) actuating the second motor means for driving the operatively connected wheel means to move the mower in a curved path into the uncut area of the lawn;

(e) sensing a predetermined change in the operation of the first motor means when the attached blade means moves to a certain position in an uncut area of the lawn; and

(f) causing a certain change in the second motor means upon detection of the predetermined change in the first motor means when the mower means reaches said certain position in the uncut area so that the mower moves in a generally straight line along the peripheral edge of the uncut area of the lawn.

5,007,235

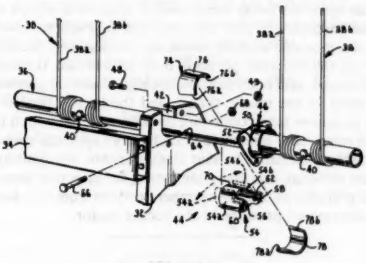
TINE TUBE BEARING ASSEMBLY FOR A HARVESTING REEL

Dwight E. Nickel, Newton; Michael L. O'Halloran, Hesston, and Cecil L. Case, Newton, all of Kans., assignors to Hay & Forage Industries, Hesston, Kans.

Filed Jun. 7, 1990, Ser. No. 534,833

Int. Cl.[5] A01D *57/03*

U.S. Cl. 56—12.4 **17 Claims**



1. In a harvester reel having a plurality of circumferentially spaced tine bars which are oscillated about their longitudinal axes within openings in carrier arms for the bars during operative rotation of the reel, thereby changing the angle of presentation of crop-engaging tines on the bars as the bars describe a circular path of travel during rotation of the reel, an improved bearing assembly on each carrier arm for its tine bar comprising:

a generally cylindrical housing secured to the arm against rotation relative thereto and having an annular wall projecting laterally outwardly from the arm generally in the axial direction of the tine bar,

said wall being axially aligned with the opening in the carrier arm and circumscribing the tine bar in radially outwardly spaced relation thereto;

a cylindrical bearing collar secured to the tine bar in surrounding relationship therewith for oscillating movement with the tine bar relative to the housing,

said collar being at least partially axially received within the housing in radially spaced relation to said wall thereof to define an annular region between the wall and the collar; and

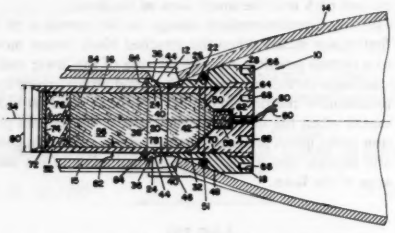
a bushing retained within said region against rotary movement relative to the housing and disposed in sliding engagement with the collar of the tine bar to support the latter during its oscillation.

5,007,236

REMOVABLE ROCKET MOTOR IGNITER

Robert I. Myers, New Hope; Bryce D. Brubaker, and Robert E. Overall, both of Huntsville, all of Ala., assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Oct. 26, 1987, Ser. No. 113,783
Int. Cl.[5] F02K 9/00
U.S. Cl. 60—256 17 Claims



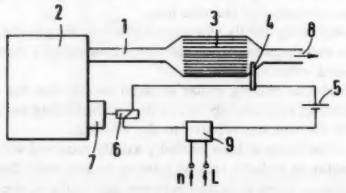
1. An igniter removably insertable in a rocket motor nozzle throat, the igniter comprises a sleeve having an axis and a generally cylindrical aperture means extending axially therethrough for insertion of an igniter tube therein, said sleeve comprises a body portion and a plurality of tab members extending axially from one end of said body portion and spaced apart circumferentially thereof, a first portion on each said tab member which extends radially outwardly such that a diameter defined by the plurality of said first tab member portions in combination is greater than a diameter of the nozzle throat, said tab members being composed of a material which allows said tab members to flex whereby said first tab member portions are movable radially inwardly so that said plurality of said first tab member portions may be inserted through the nozzle throat, said body portion having a diameter greater than a diameter of the nozzle throat, and the igniter further comprises an igniter tube containing ignition material which igniter tube is removably insertable in said sleeve aperture means and removably attachable to said sleeve, means for igniting said ignition material, and frangible means for effecting separation of said plurality of first tab member portions from said sleeve at a predetermined pressure in the rocket motor.

5,007,237

DIESEL INTERNAL COMBUSTION ENGINE WITH TEMPERATURE-DEPENDENT ADJUSTMENT OF START OF FUEL INJECTION

Eckart Müller, Gifhorn, Fed. Rep. of Germany, assignor to Volkswagen A.G., Wolfsburg, Fed. Rep. of Germany

Filed Jul. 27, 1989, Ser. No. 386,283
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1988, 3828540
Int. Cl.[5] F01N 3/00; F02N 17/00
U.S. Cl. 60—285 3 Claims



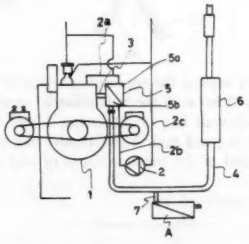
1. A diesel internal combustion engine having an arrangement for temperature-dependent adjustment of fuel injection start-up comprising catalyst means which is effective only for promoting oxidation of hydrocarbons in exhaust gas in an exhaust gas line of the engine at a temperature exceeding a start-up temperature, temperature sensor means for detecting the temperature of the catalyst means, and a control means for delaying fuel injection start-up only when the temperature sensor means detects a temperature that exceeds the start-up temperature of the catalyst means.

5,007,238

APPARATUS FOR EVAPORATING CONDENSED LIQUID

Hideo Seko, Hashima, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 23, 1989, Ser. No. 370,852
Claims priority, application Japan, Jun. 23, 1988, 63-083376[U]
Int. Cl.[5] F01N 3/02; H05B 3/02
U.S. Cl. 60—309 6 Claims



1. An apparatus for evaporating condensed liquid in a gas heat pump comprising;

a casing having therein a space;

a powdery ceramic material provided in the casing;

inlet means for guiding the condensed liquid into the casing; and

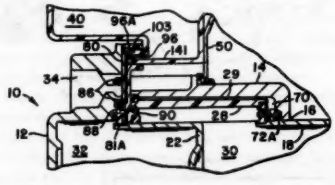
heating means for heating the condensed liquid within the casing.

5,007,239

MASTER CYLINDER WITH SANDWICHED COMMUNICATION INTERFACES

John E. Steer, South Bend, Ind., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Dec. 12, 1989, Ser. No. 449,196
Int. Cl.[5] B60T 11/20, 11/232, 11/236, 11/28
U.S. Cl. 60—562 22 Claims



1. A master cylinder, comprising a first housing part and a second housing part and having an end of one part received at the end of the other part so that the parts define therebetween an interior opening comprising a bore, a sleeve member received within said second housing part, first piston means slideably received within an end opening of said second part, second piston means received within said bore and biased by first resilient means, second resilient means biasing the first piston means, a reservoir communicating with said bore, and first and second interface members captured between said first and second parts, the interface members having sealing members molded thereupon to provide fluid flow paths between the reservoir and bore and between said bore and fluid outlets.

5,007,240

HYBRID RANKINE CYCLE SYSTEM

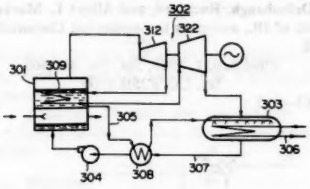
Tetsuyoshi Ishida; Shigeyoshi Kawano, both of Kure; Ikuo Kohtaka, Kamo; Kojiro Yamada; Hiroyuki Kaku, both of Hiroshima, and Tsuneo Narita, Tokyo, all of Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1989, Ser. No. 308,812

Claims priority, application Japan, Dec. 18, 1987, 62-320579; Feb. 12, 1988, 63-30648; Mar. 24, 1988, 63-70438; Mar. 24, 1988, 63-70440

Int. Cl.[5] F01K *25/06*

U.S. Cl. 60—673 8 Claims



1. A hybrid Rankine cycle system, comprising:

separating means including a heating device for separating working medium steam from weak absorbent solution including said working medium and a substance having a boiling point higher than a heating temperature in said heating device, thereby leaving a strong absorbent solution, said substance being selected from the group consisting of alkali metal halides and alkali earth metal halides;

wherein said separating means includes a boiler for heating said weak absorbent solution to separate said steam and said strong absorbent solution therefrom;

a steam driven prime mover through which said steam from said separating means expands to produce work outside, wherein said prime mover is a multiple-stage turbine, and said system includes heat transfer means disposed within said separating means for transferring heat from steam and/or said strong absorbent solution in said separating means to steam passing out from one stage of said turbine, and wherein the steam from said heat transfer means is delivered into a next stage of said turbine;

an absorber condenser means for introducing thereinto said strong absorbent solution to absorb into steam from said prime mover to produce said weak absorbent solution;

means for delivering said weak absorbent solution towards said separating means; and

means for delivering said strong absorbent solution from said separating means towards said absorber condenser means.

5,007,241

KINETIC ENERGY RECOVERY DEVICE OF LIQUID AND GAS

Yutaka Saitou, 24-25, 1-chome, Kikui, Nishi-ku, Nagoya-shi, Aichi-ken, Japan

Filed Sep. 12, 1989, Ser. No. 406,397

Int. Cl.[5] F01B *21/04;* F02B *73/00*

U.S. Cl. 60—698 10 Claims

1. A kinetic energy recovery device comprising:

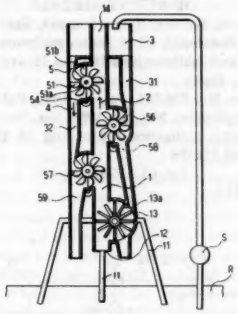
(a) a gas guide member;

(b) a liquid guide member installed along said gas guide member, said gas guide member and said liquid guide member partly communicating with each other;

(c) a vane wheel supported rotatable by a rotary shaft supported at the communicating portion between said gas guide member and said liquid guide member in the lateral direction with respect to the longitudinal direction of both guide members and rotating on receiving the rotating force from a gas flow rising in said gas guide member and a liquid flowing down in said gas guide member;

(d) a first liquid storage member installed on the upper end of said liquid guide member;

(e) a second liquid storage member installed at lower side of said liquid guide member;



(f) a liquid pumping-up means for pumping up a liquid from said second liquid storage means into said first liquid storage member;

(g) an energy recovery means; and

(h) means for transmitting the rotation of said vane wheel to said energy recovery means.

5,007,242

THERMOELECTRIC HUMIDIFIER AND DISPLAY CASE PROVIDED WITH SUCH HUMIDIFIER

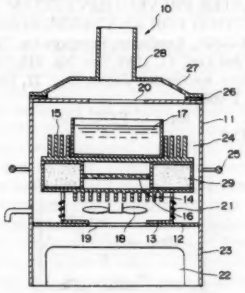
Hitoshi Nakayama, Kamagaya, Japan, assignor to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Filed Sep. 19, 1989, Ser. No. 409,338

Claims priority, application Japan, Sep. 30, 1988, 63-128485[U]

Int. Cl.[5] F25B *21/02*

U.S. Cl. 62—3.2 7 Claims



1. A humidifier for producing cooled and humidified air, comprising:

(1) a Peltier effect element having a heat radiating side and a cooling side;

(2) means for passing air near said cooling side for producing cooled air;

(3) a reservoir for containing a quantity of water disposed apart from but near said heat radiating side such that radiated heat to said reservoir and said water is sufficient to heat said water and to produce water vapor from the quantity of water such as to substantially humidify said cooled air;

(4) passage means for passing said cooled air into and mixing with said water vapor, whereby cooled and substantially humidified air is produced; and

(5) an outlet to exhaust said cooled and humidified air from said humidifier.

5,007,243

VESSEL FOR MAKING HIGH-PURITY FINE PARTICLES OF ACTIVE METALS

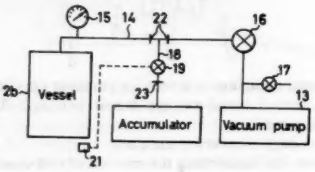
Toru Yamaguchi, Sakura; Yukio Inazuki, Sayama, and Hideo Nakazawa, Funabashi, all of Japan, assignors to IHI Master Metal Ltd. and Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Division of Ser. No. 378,531, Jul. 11, 1989, Pat. No. 4,971,258. This application Nov. 21, 1989, Ser. No. 440,056

Claims priority, application Japan, Aug. 26, 1988, 63-210620; Sep. 2, 1988, 63-218486

Int. Cl.[5] F25B *19/00*

U.S. Cl. 62—51.1 9 Claims



1. Apparatus for use in manufacturing high-purity fine particles of reactive metals, comprising:

a hermetically sealable vessel for containing inert gas atmosphere therein;

a pair of rubber gloves for conducting operations within the vessel under the inert gas atmosphere;

a cryogenic cooling device attached to one wall of the vessel so as to condense the moisture remaining in the inert gas atmosphere into dew droplets; and

an accumulator for equalizing the inner pressure of the vessel with the ambient atmospheric pressure.

5,007,244

DISASTER PREVENTION SYSTEM AND CONSTRUCTION FOR AN UNDERGROUND SPACE

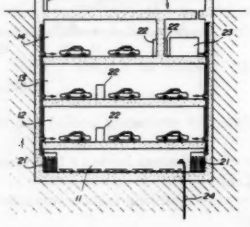
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Oct. 11, 1989, Ser. No. 419,936

Claims priority, application Japan, Dec. 21, 1988, 63-322760; Feb. 21, 1989, 1-40886

Int. Cl.[5] F17C *1/00*

U.S. Cl. 62—53.1 4 Claims



1. A disaster prevention system for an underground space comprising liquid air storage means for storing liquid air in said underground space, a power generator means in said underground space, conduit means in said underground space leading from said liquid air storage means to a plurality of locations in said underground space such that liquid air released from said liquid air storage means provides compressed air in said conduit means, said conduit means having a plurality of compressed air outlets located at a plurality of locations in said underground space such that the compressed air in said conduit means is discharged through said outlets to thereby maintain said underground space at pressure higher than atmospheric pressure, said conduit means comprising a conduit means portion leading to said generator means such that the air for operating said generator means is supplied by said liquid air storage means via said conduit means.

5,007,245

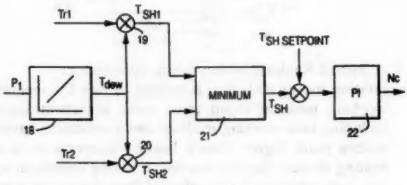
VAPOR CYCLE SYSTEM WITH MULTIPLE EVAPORATOR LOAD CONTROL AND SUPERHEAT CONTROL

John F. Defenbaugh, Rockford, and Albert L. Markunas, Roscoe, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 1, 1989, Ser. No. 401,866

Int. Cl.[5] F25B *1/00*

U.S. Cl. 62—117 22 Claims



1. A vapor control system, comprising a variable speed compressor, a condenser operatively associated with the compressor, a plurality of evaporators operatively associated with the compressor and the condenser, means for controlling compressor speed to provide a refrigerant superheat temperature at least equal to a selected value so as to provide substantially only refrigerant vapor at an inlet of the compressor, and means for individually controlling load temperature of each evaporator.

5,007,246

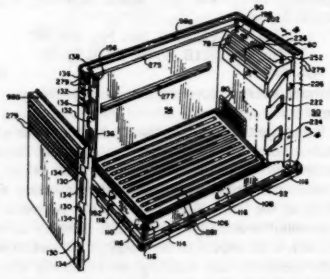
MODULAR MECHANICAL REFRIGERATION UNIT

Richard W. Kruck, Sodus Township, Berrien County; Omer N. Cur; Douglas D. Leclear, both of St. Joseph Township, Berrien County; Steven J. Kuehl, Royalton Township, Berrien County, all of Mich., and Ralph R. Burin, Milton Township, DuPage County, Ill., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 489,441, Mar. 12, 1990, which is a division of Ser. No. 218,233, Jul. 12, 1988, Pat. No. 4,907,419. This application May 18, 1990, Ser. No. 412,981

Int. Cl.[5] F25B *49/02*

U.S. Cl. 62—131 7 Claims



1. A system in a refrigeration unit for detecting when a closure panel of the unit is ajar comprising a first switch posi-

tioned to be engaged by a hinge side of said closure panel and having contacts which are open when said closure panel is open, said first switch contacts being closed in response to closure of said closure panel, a second switch positioned to be engaged by the outer edge of said closure panel and having contacts which are normally closed when said closure panel is open, said second switch contacts being opened in response to complete closure of said closure panel, delay means responsive to closure of said first switch contacts for initiating a time delay of predetermined duration, and means for energizing an alarm if said second switch contacts are not opened before the end of said time delay of predetermined duration.

5,007,247

REFRIGERATION OR HEAT PUMP INSTALLATION

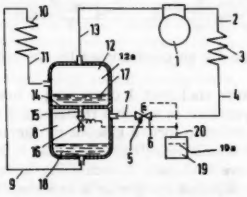
Per Danig, Holte, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Sep. 25, 1989, Ser. No. 411,880

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1988, 3833209

Int. Cl.[5] F25B *41/00*

U.S. Cl. 62—174 **16 Claims**



1. A refrigeration or heat pump installation that utilizes a fluid refrigerant, comprising a liquid separator having an intermediate chamber and a liquid chamber, the liquid chamber having an upper portion and a lower portion above the intermediate chamber, a compressor, a suction conduit fluidly connecting the compressor to the upper portion of the liquid chamber, a condenser, a pressure conduit connecting the condenser to the compressor, an evaporator, a third circuit for conducting fluid from the intermediate chamber to the evaporator, a fourth conduit for conducting fluid from the evaporator to the liquid chamber and control means for controlling fluid flow from the condenser to the intermediate chamber and liquid flow from the lower portion of the liquid chamber to the intermediate chamber, the control means including first switching valve means operable between an opened and a closed position for controlling the flow of fluid from the condenser to the liquid separator, second switching valve means operable between an opened and a closed position for controlling the liquid flow to the intermediate chamber and being operated in the opposite sense from the first switching valve means, the first switching valve means including an expansion valve.

5,007,248

BEVERAGE COOLING SYSTEM

Eliahu Maier, Petach Tikva; Yair Kovesh, and Abraham Zorea, both of Kfar Szold, all of Israel, assignors to Lordan & Co., Mobile Post Galil Elyon, Israel

Filed Oct. 30, 1989, Ser. No. 429,145

Int. Cl.[5] B60H *1/32*

U.S. Cl. 62—244 **4 Claims**

4. A vehicle having an integrated air conditioning system and beverage cooling system comprising:

means for compressing a refrigerant fluid,

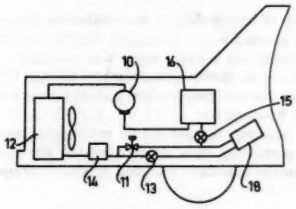
first means for receiving and evaporating the compressed refrigerant fluid,

means associated with said air conditioning system for circulating air across said first means for receiving and evaporating,

second means in heat conductive engagement with a beverage container for receiving and evaporating the compressed refrigerant fluid; and

first and second means located downstream of said means for compressing and upstream of respective said first and said second means for receiving and evaporating for receiving and causing expansion of the refrigerant fluid;

wherein said first means for receiving and evaporating receives the refrigerant fluid in liquid form at a first pressure and at a first temperature and is operative to reduce the pressure of the liquid too a second pressure and the temperature of the liquid to a second temperature, the second pressure and the second temperature being respectively substantially lower than the first pressure and the first temperature; said second means for receiving and evaporating receiving the refrigerant fluid in liquid form at a third pressure and at a third temperature and being operative to reduce the pressure of the liquid to a fourth pressure and the temperature of the liquid to a fourth temperature, the fourth pressure and the fourth temperature being respectively substantially lower than the third pressure and the third temperature;



wherein said first means for receiving and causing expansion comprises means for providing a first constriction to the fluid flow and aid second means for receiving and causing expansion comprises means for providing a second constriction to the fluid flow greater than said first constriction;

and wherein said first means for receiving and causing expansion and said first means for receiving and evaporating are arranged in series with and downstream of said second means for receiving and causing expansion and said second means for receiving and evaporating, there also being provided a valve associated with a fluid flow path extending between an inlet located upstream of said second means for receiving and causing expansion and an outlet located between said second means for receiving and evaporating and said first means for receiving and causing expansion, the fluid being permitted to flow through said valve when aid valve is open, substantially to the exclusion of fluid flow through said second means for receiving and causing expansion and said second means for receiving and evaporating, fluid flow being diverted through said second means for receiving and causing expansion and said second means for receiving and evaporating when said valve is closed.

5,007,249

IN STORE KEEP-A-COOLER

Albert Van Druff, Jr., Lawrenceville, Ga., assignor to Cornerstone Products Inc., Norcross, Ga.

Filed Mar. 2, 1990, Ser. No. 487,147

Int. Cl.[5] A47F *3/04*

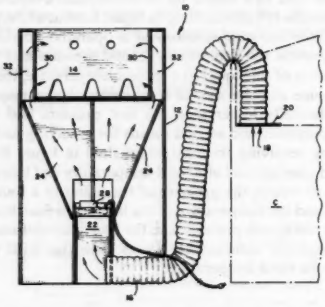
U.S. Cl. 62—255 **10 Claims**

1. An auxiliary, portable storage and cooling unit for use in combination with a primary source of refrigerated air comprising:

a housing having inner and outer wall surfaces and including a support base and upper opening;

a product storage compartment formed in said upper opening of said housing;

a refrigerated air flow path including, an air inlet duct having an inlet opening structured to be in fluid communication with said primary source of refrigerated air; an air inlet chamber connected to said air inlet duct;



a plurality of funnel-shaped air distribution ducts increasing in size upwardly and outwardly from said air inlet chamber toward said housing inner wall surfaces;

a plurality of air distribution chambers located between said product storage compartment and said inner wall surfaces of said housing; and

air flow openings formed in said product storage compartment permitting flow of refrigerated air from said air distribution chambers into said product storage compartment.

5,007,250

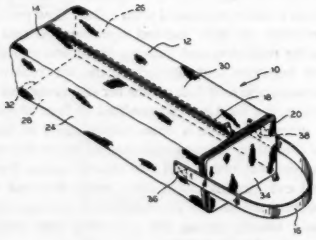
INSULATED COOLING CONTAINER FOR CANNED LIQUIDS

Ronald L. Musielak, Downers Grove, Ill., assignor to R.V.R. Enterprises, Ltd., Lombard, Ill.

Filed Nov. 1, 1989, Ser. No. 429,988

Int. Cl.[5] F25D *3/08*

U.S. Cl. 62—372 **10 Claims**



1. A portable insulated cooling container comprising a first compartment adapted to receive beverage containers to be maintained in a cool state; a second compartment adapted to receive a coolant material, a pliant substantially non-insulating material in said cooling container separating said first compartment and said second compartment; a first opening in said first compartment, and first closure means to selectively open and close said first compartment; a second opening in said second compartment, and second closure means to selectively open and close said second compartment; said first and second compartment being independently accessible through said first and second openings, respectively.

5,007,251

INSTALLATION FOR AIR-CONDITIONING BY ABSORPTION

Jean-Luc Thuez, St-Germain-en-Laye, and Robert Dehausse, Joinville, both of France, assignors to A.R.M.I.N.E.S., Paris, France

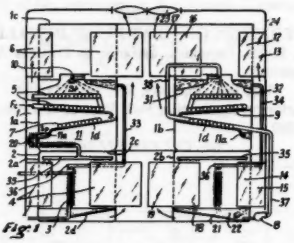
PCT No. PCT/FR88/00598, § 371 Date Aug. 2, 1989, § 102(e) Date Aug. 2, 1989, PCT Pub. No. WO89/05427, PCT Pub. Date Jun. 15, 1989

PCT Filed Dec. 7, 1988, Ser. No. 392,953

Claims priority, application France, Dec. 7, 1987, 87 16981

Int. Cl.[5] F25B *15/00*

U.S. Cl. 62—476 **20 Claims**



1. Installation for air-conditioning by absorption, comprising:

a high-pressure enclosure **1** containing a heater heated to high temperature, in which a refrigerating fluid is driven by evaporation to form a gaseous refrigerant, and a condenser on which the refrigerating fluid is liquidified; and

a low-pressure enclosure **2** containing an evaporator on which the liquified refrigerant is vaporized for producing a desired cold and an absorber on which the gaseous refrigerant is reabsorbed in the depleted solution before being returned to the heater via a pump;

said high-pressure enclosure **1** and said low-pressure enclosure **2** each having a generally toric-shaped casing with a common vertical axis, said high-pressure enclosure **1** being located above and superimposed on said low-pressure enclosure **2**;

means enclosing a high-pressure and a low-pressure central free space in each said enclosure, said high-pressure central free space in said high-pressure enclosure is de-limited by central cylindrical wall **1***a* and being coaxial with said common vertical axis, and said low-pressure central free space in said low-pressure enclosure is de-limited by central cylindrical wall **1***b* and coaxial with said vertical axis; and

cooling means **16–18** positioned in said central free space delimited by said cylindrical inner walls **1***b* of said two casings of said two enclosures **1, 2**, for ensuring partial or total exchange of heat energy produced by condensation, absorption and possible evaporation.

5,007,252

COMBINATION NECKLACE

Shigetoshi Mochizuki, Chofu-City, Japan, assignor to Satoru Yagi, San Francisco, Calif.

Filed Nov. 8, 1989, Ser. No. 433,651

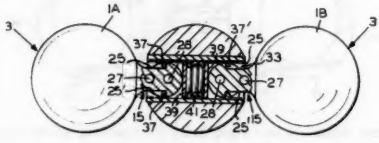
Claims priority, application Japan, Jun. 20, 1989, 1-61737

Int. Cl.[5] A44C *5/00*

U.S. Cl. 63—3 **5 Claims**

1. A combination necklace comprising a first necklace formed of a plurality of first stones, means for joining the first stones together into a first string of stones, a pair of first connection fittings, said first connection fittings being joined to a respective first stone at each end of the first string, each of said first connection fittings comprising a first end stone which includes an outwardly projecting mating part, a second necklace formed of a plurality of second stones of a type similar to

the first stones, means for joining the second stones together into a second string of stones, and a pair of second connection fittings, said second connection fittings being joined to a respective second stone at each end of the second string, each of said second connection fittings comprising a second end stone which includes an outwardly projecting mating part, and at least one joining stone of a type similar to the first stones, said first and second stones and first and second end stones and said joining stone having substantially the same predetermined size and shape, said joining stone including means for removably



engaging said connection fittings to join ends of either of the first and second strings together, said last-mentioned means includes a bore formed through the joining stone with the bore having first and second openings on opposite sides of the joining stone, said bore being sized sufficient to slidably receive said mating parts of the first and second connection fittings through respective first and second openings, said joining stone including an engagement protrusion concealed within the bore for releasably holding the mating parts of the first and second connection fittings to the joining stone.

5,007,253

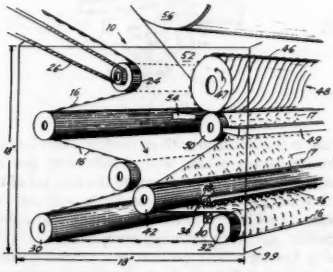
PORTABLE LACE CLIPPING AND SHEARING APPARATUS FOR SYNCHRONOUS OPERATION WITH A LACE-KNITTING MACHINE

Thomas Rahner, 1126 17th Ave., West Belmar, N.J. 07719

Continuation-in-part of Ser. No. 173,079, Mar. 25, 1988, abandoned. This application Feb. 6, 1989, Ser. No. 306,947

Int. Cl.[5] D04B *35/00*

U.S. Cl. 66—149 R **10 Claims**



1. A portable and wheelable clipping and shearing machine for finishing lace sheet produced by a lace machine, said portable machine comprising:

a housing and a plurality of wheel means mounted to the housing for supporting the housing and enabling the housing to be wheeled to a location adjacent a lace machine;

a take up roller, supported by the housing, for taking up lace sheet as it emerges from said lace machine and a conveying means for conveying lace sheet through said clipping and shearing machine along a predetermined path;

clipping means, supported by the housing, for clipping floats disposed on said lace sheet to cut said floats into strands, each one of said strands being connected at one end thereof to a respective motif located on said lace sheet;

shearing means, supported by the housing, for shearing said strands from said lace sheet close to said respective motives; and

coupling and synchronizing means for detachably coupling said portable machine to the lace machine in a manner enabling said portable machine to be driven from said lace machine and in a manner wherein the speed of movement of said lace sheet through said portable machine is synchronized to the speed at which said lace sheet emerges from said lace machine, said coupling and synchronizing means comprising the sole mechanical linkage between said portable machine and said lace machine whereby said machines may be easily and rapidly disattached and attached from and to one another.

5,007,254

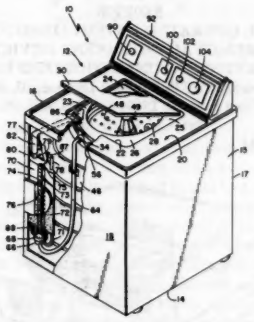
ADDITIVE FLUID VIEWING

Robert E. Wolfe, Millis, and Ronald A. Goyette, Ashby, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 458,218, Dec. 28, 1989, abandoned. This application Nov. 9, 1990, Ser. No. 610,739

Int. Cl.[5] D06F *39/02;* **G01F** *23/02*

U.S. Cl. 68—17 R **6 Claims**



1. A clothes washing machine comprising:

a cabinet having a front defining wall provided with a vertically elongated window;

a drain tub disposed in said cabinet and adapted for holding wash water;

a spin tub rotatably disposed within said drain tub, for processing a wash load in said cabinet; and

an additive liquid dispensing system disposed in said cabinet for dispensing additive liquid to said wash water, said dispensing system comprising a reservoir including housing means having a hollow interior portion for holding a multi-load quantity of the additive liquid and supplying respective smaller quantities of the additive liquid to successive wash loads in said drain tub, said dispensing system further comprising additive liquid viewing means comprising a transparent portion of said reservoir aligned with said window for determining the level reached by the quantity of additive liquid in said housing means.

5,007,255

AUTOMATIC LOADING AND UNLOADING SYSTEM FOR DYEING MACHINES USING WOUND-UP FABRIC AND RELATIVE DEVICE FOR ITS ACCOMPLISHMENT

Giampietro Brazzoli, Milan, Italy, assignor to Brazzoli S.p.A., Italy

Filed Nov. 27, 1989, Ser. No. 442,023

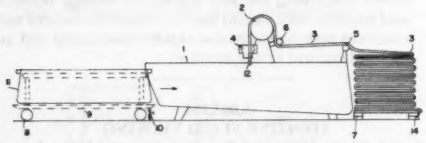
Claims priority, application Italy, Nov. 29, 1988, 22785 A/88

Int. Cl.[5] D06F *23/16*

U.S. Cl. 68—210 **7 Claims**

1. Automatic loading and unloading device for a dyeing machine of the type having a kier for receiving fabric folded up into cords, characterized by the fact that, the fabric to be dyed is folded outside the dyeing machine kier, and comprising a perforated vat similar in form and dimension to the kier of the

dyeing machine, means at the exterior of said machine for folding into said vat the fabric which is to be dyed, said folded fabric being disposed to be introduced with the vat into said machine where it undergoes a dyeing operation, said machine having thereon a water tight introduction door through which



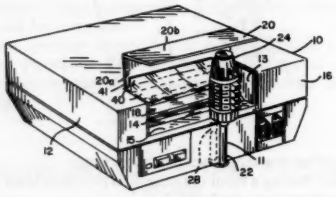
said vat passes in and out of said machine, and the dyed fabric being disposed to be drawn out in the vat from the machine after the dyeing procedure, and to be immediately substituted with another amount of fabric to be dyed prefolded in another vat.

5,007,256

CARTRIDGE OPERATED ENTERTAINMENT SYSTEM WITH REMOVAL DETERRENT DEVICE FOR PREVENTING UNAUTHORIZED USE

Thomas E. Lowe, 35W528 Parsons, Dundee, Ill. 60118

Filed Sep. 20, 1989, Ser. No. 409,682
Int. Cl.[5] E05B *73/00*
U.S. Cl. 70—14 **23 Claims**



1. A cartridge-operated entertainment system comprising:
a housing having a cartridge receiving access opening,
a removable deterrent device for preventing unauthorized use of said entertainment system,
said deterrent device comprising a base with first means removably engageable with said housing and second means positionable adjacent said access opening for preventing insertion of a cartridge into said opening when said first means is engaged with said housing,
a removable locking head selectively positionable and lockable on said second means for preventing disengagement of said first means from said housing,
said housing including a door that is selectively movable between an open position for permitting access to said cartridge receiving access opening and a closed position, and
a flexible shield secured to an underside of said door for covering and protecting said cartridge receiving access opening from dust and other foreign matter when said deterrent device base is engaged with said housing and said cover is in an open position.

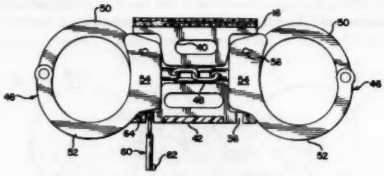
5,007,257

SAFETY SHIELD FOR DOUBLE-LOCK HANDCUFFS

Charles E. Thompson, 945 Garfield St., Oak Park, Ill. 60304

Filed Oct. 9, 1990, Ser. No. 594,414
Int. Cl.[5] E05B *75/00*
U.S. Cl. 70—16 **7 Claims**

1. A safety shield for handcuffs having a pair of wristlets connected by a chain, first lock means on each wristlet for disengagement and opening thereof after application to a wrist and second lock means on each wristlet for fixing the preset contracted position thereof on a wrist, comprising:
a rigid body having hinged members movable between open and closed positions operationally mountable on said wristlets to enclose said chain and first and second lock means and form a rigid connection between the wristlets; and



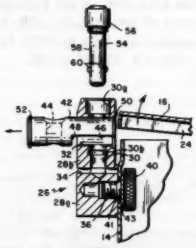
access means on said rigid body for enabling access to said second lock means,
whereby said rigid body is operationally mountable on said handcuffs before application to the wrists and said second lock means can be actuated after application to the wrists with said body members in the operationally closed position.

5,007,258

BOX LOCK ASSEMBLY

John C. Mahaney, Rutland, Mass., assignor to Olson Manufacturing Co., Holden, Mass.

Filed May 18, 1990, Ser. No. 525,736
Int. Cl.[5] B65D *55/14*
U.S. Cl. 70—159 **13 Claims**



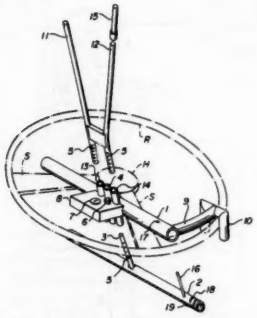
1. For use in combination with an electric meter box or other like enclosure having a base wall, a side wall, and a cover which may be opened to gain access to the interior of the box, and which when closed, overlaps said side wall and prevents such access, a lock assembly for maintaining said cover in its closed position, said lock assembly comprising:
a housing having a base portion and a head portion, said head portion defining a lock chamber intersected by a through first passageway;
means accessible from the interior of said box for securing said base portion to the exterior of said side wall at a location such that said head portion protrudes above the level of the closed cover;
a post member having a second passageway extending therethrough, said post member being receivable in said first passageway for selective movement between an operative position at which said post member overlaps the closed cover to prevent opening thereof and said second passageway is aligned with said lock chamber, and an inoperative position at which said post member is clear of the closed cover to permit opening thereof; and
a barrel lock removably receivable in said lock chamber to extend through the thus aligned second passageway to thereby prevent movement of said post member from said operative position to said inoperative position.

5,007,259

AUTOMOBILE ANTI-THEFT DEVICE

David Mellard, 701 SE. 22nd St., Fort Lauderdale, Fla. 33316

Filed Feb. 8, 1990, Ser. No. 476,785
Int. Cl.[5] B20R 25/02
U.S. Cl. 70—209 16 Claims



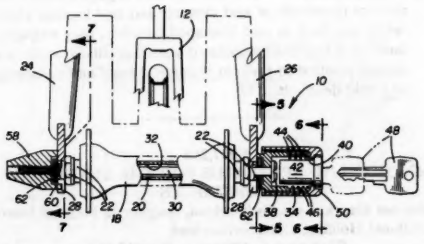
1. An anti-theft device for a motor vehicle having a driver's seat with a seatback and a steering wheel with opposite sides, a rim and a spoke, comprising a first rod disposed on one side of the rim and the spoke of the steering wheel, a projector bar, a second rod being disposed on the other side of the rim and the spoke of the steering wheel, a locking spike attached to said second rod, first means for locking between said first and second rods, and second means for locking said projector bar to said first rod with said projector bar extending toward the seatback regardless of the rotational position of the steering wheel for preventing a person from sitting on the driver's seat.

5,007,260

BICYCLE LOCKING SYSTEM

Harry Sharp, 430 Sanchez, Apt. B, San Francisco, Calif. 94114

Filed Jun. 29, 1990, Ser. No. 546,241
Int. Cl.[5] E05B 71/00
U.S. Cl. 70—233 19 Claims



1. A system for lockingly affixing a removable component between a bifurcated portion of a wheeled vehicle comprising:

shaft means for passing between the bifurcated portion of the wheeled vehicle, said shaft means defining a bore therethrough;

spindle means for passing through said shaft means bore, the spindle means having an integrally formed enlarged end, said enlarged end formed to receive a wrench capable of turning said spindle means and said spindle means further defining a threaded end distal of said enlarged end;

a lug threadably engageable with said spindle means threaded end, said lug defining engagement means for engaging said bifurcated portion whereby said lug becomes non-removable when said spindle means is passed through said shaft means bore and when said spindle means is threadably engaged therewith; and

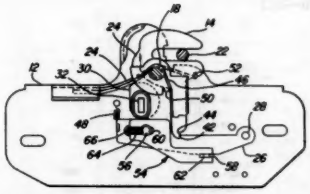
cylindrically shaped lock means for rotatably covering said enlarged end while said spindle means is passed through said shaft means and said lug is engaged with said bifurcated portion.

5,007,261

ELECTRICALLY ACTUATED LOCK MECHANISM WITH ELECTRICAL FAILURE PROTECTION

Norman G. Quantz, 2584 Norway Lake Rd., Lapeer, Mich. 48446

Filed Jul. 20, 1989, Ser. No. 383,198
Int. Cl.[5] E05B 60/19
U.S. Cl. 70—240 20 Claims



1. A locking mechanism for entrapping a lock bar comprising:

a support frame;

a lock member pivotally attached to said support frame, said lock member having a lock dog and a guide tab;

a release member slidably attached to said lock member, said release member having a linear slot receiving said guide tab therein, said release member being displaceable along said linear slot between an engage and release position;

latch means having a latch member pivotally attached to said support frame and displaceable between an open and a locked position, said latch member having a dog catch engaging said lock dog to lock said latch member in said locked position, and a catch slot receiving said lock bar in said open position and entrapping said lock bar in said locked position, said latch means further being pivotable in response to forcibly rotating said latch member beyond said locked position to displace said release member to said release position;

first resilient means for producing a force biasing said latch member towards said open position;

second resilient means for producing a force biasing said lock member towards a locked position engaging said lock dog with said dog catch;

third resilient means for producing a force biasing said release member to said engage position;

a housing attached to said support frame;

a cam gear rotatably disposed in said housing, said cam gear having a predetermined cam surface;

an electric motor for rotating said cam gear;

at least one stud, protruding from said cam gear, engaging said latch means as said cam gear rotates through a first rotational interval to displace said latch member to said locked position, said at least one stud further engaging said release member when said release member is in said engage position to displace said lock member during a second rotational interval of said cam gear to disengage said lock dog from said dog catch, said at least one stud not engaging said release member when said release member is displaced by said latch means to said release position; and

cam actuated switch means responsive to the displacement of said latch means from said open position towards said locked position for providing electrical power to said electric motor and responsive to a first contour of said cam surface for terminating said electrical power to said electric motor after said latch member is in said closed position, said cam actuated switch means further being

responsive to an unlock signal for providing electrical power to said electric motor and responsive to a second contour of said cam surface for terminating said electrical power to said electric motor after said latch member is released from said locked position by the disengagement of said dog catch.

5,007,262

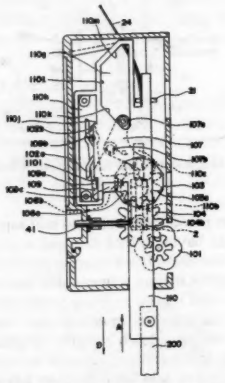
DIAL LOCK

Hatsuo Nakai, Toyonaka, Japan, assignor to Clover Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 215,584, Jul. 6, 1988, Pat. No. 4,905,488. This application Jun. 16, 1989, Ser. No. 367,722

Int. Cl.[5] E05B *37/02*

U.S. Cl. 70—312 **4 Claims**



1. A setting part of a dial clock comprising:

a lock pin having a plurality of projections formed at fixed spatial intervals along said axial direction thereof;

a slide bar having a projection and recess in a fixed configuration at said side thereof abutting one end of said lock pin, subjected to control over said movement thereof by engagement of said projection and recess with said lock pin, and serving for opening and closing said door while acting in association with said locking part to lock said door;

lock gears disposed on the same axis as the rotating axis of said lock pin, numerically corresponding to projections of said lock pin, having gates to detachably engage with projections of said lock pin of the inner periphery and also having gearing teeth on the outer periphery thereof;

intermediate gears having internal teeth to detachably engage with external teeth of said lock gears and further having gearing teeth on the other part, for example, the outer periphery thereof;

dials having gearing teeth to interlock with external teeth of said intermediate gears and each provided with code digits on the outer periphery thereof;

return-to-zero gears fixed to said dials for returning said dials to the zero-indicating positions;

interlocking levers to catch said slide bar while engaging with said return-to-zero gears when said dials are all set at zero and to permit locking operation of said slide bar when at least one of said dials is set at any number other than zero;

return cams provided on said slide bar for controlling the operation of said interlocking levers;

arms acting in association with locking and unlocking operation of said slide bar and driving said return-to-zero gears for adapting said dials to return to the zero-indicating positions at the time of locking and unlocking; and

manual operation plates having gearing teeth to engage with said external gearing teeth of said intermediate gears.

5,007,263

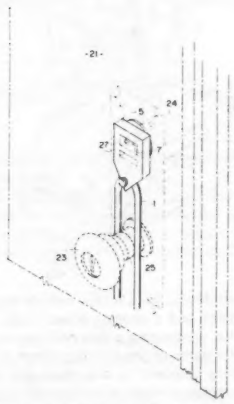
SECURITY DEVICE

Bryan V. Taylor, #601 - 7275 Salisbury Avenue, Burnaby, Canada V5E 4E1

Filed Jun. 22, 1990, Ser. No. 542,085

Int. Cl.[5] E05B *13/04*

U.S. Cl. 70—416 **4 Claims**



1. An improved security device mountable on an inside surface of a closure and comprising:

(a) a U-shaped member;

(b) a locking plate having upper, middle and lower regions, said locking plate having a first opening in said upper region being adapted to engage a latch of a deadbolt and a second opening in said middle region being adapted to engage a key head of a key inserted into a deadbolt; and

(c) pivotal connecting means in said lower region for removably connecting said U-shaped member to said locking plate with said U-shaped member extending below said locking plate;

(d) whereby said U-shaped member may engage a shaft of an interior doorknob of said closure, and said locking plate, while attached to said U-shaped member, may engage a latch or a key head associated with a deadbolt while in a locked position to prevent rotation thereof and unlocking of a said deadbolt.

5,007,264

METHOD AND APPARATUS FOR THE BENDING OF WORKPIECES

Johannes Haack, Lyss, Switzerland, assignor to Feintool International Holding, Lyss, Switzerland

Filed Nov. 9, 1988, Ser. No. 269,192

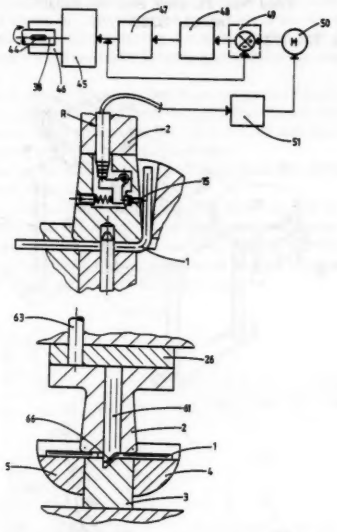
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1987, 3739173

Int. Cl.[5] B21D *5/04*

U.S. Cl. 72—10 **28 Claims**

1. Apparatus for bending a workpiece by swivel bending jaws wherein the bent portion assumes a predetermined bending angle with respect to the workpiece, which comprises: a bending anvil; a bending punch spaced from the bending anvil and movable towards and away from the bending anvil; at least one swivel bending jaw associated with the bending anvil and movable in the direction of the bending punch; wherein the bending anvil, bending punch and swivel jaw are adapted to hold a workpiece between the bending anvil on the one hand and bending punch and swivel jaw on the other hand and wherein the swivel jaw is adapted to bend at least one first leg

of the workpiece in the direction of the bending punch; and means in the bending punch for determining the actual bending



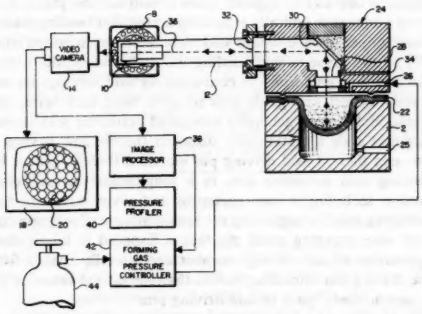
angle of the bent leg by direct measurement of the distance between the bending punch and the bent leg of the workpiece.

5,007,265

OPTICAL MONITOR FOR SUPERPLASTIC FORMING

Murray W. Mahoney, Camarillo, Calif., and Amit K. Ghosh, Ann Arbor, Mich., assignors to Rockwell International, El Segundo, Calif.

Filed Dec. 19, 1988, Ser. No. 285,987
Int. Cl.[5] B21D *26/02*
U.S. Cl. 72—37 **12 Claims**



1. A device for optically monitoring the strain rate of a blank during superplastic forming of the blank against a die, comprising:

a light source positioned to direct light against the blank while it is being formed against said die;

a video camera positioned and focused to view light reflected from reference marks on the blank being formed and to provide a video signal of the reflected light;

a video monitor for receiving the video signal and for displaying the reference marks; and

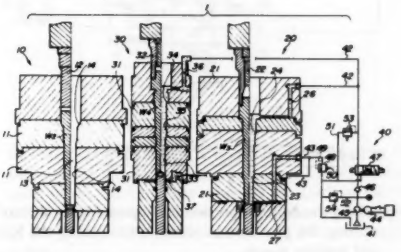
means for measuring the strain rate occurring in the blank as it is being superplastically formed as a function of a detected change in dimensions of the reference marks during said superplastic forming of the blank.

5,007,266

SUCCESSIVE COLD WORKING PROCESS

Shohachi Nishiuchi; Shigeo Ohta; Hitoshi Imai, and Haruo Meguro, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1989, Ser. No. 320,466
Int. Cl.[5] B21J *3/00;* **B21C** *23/32;* **B21K** *1/00*
U.S. Cl. 72—44 **20 Claims**



1. A method of successively cold working a billet, comprising the steps of:

(a) forming a chemically converted lubricating coating on a surface of the billet;

(b) forging said billet into an intermediate product at a temperature below a transformation temperature of the billet;

(c) positioning said intermediate product in a die cavity in a die assembly;

(d) entirely immersing and covering said intermediate product with lubricating oil while said intermediate product is positioned in said die cavity in said die assembly; and

(e) forging said intermediate product at a temperature below the transformation temperature substantially simultaneously with a step (d) before the intermediate product gains a predetermined hardness due to age hardening resulting rom said forging step (b).

5,007,267

METHOD AND APPARATUS FOR MANUFACTURING BELLOWS PIPE

Katsushi Washizu, Numazu, and Mitsumasa Ohtaka, Okazaki, both of Japan, assignors to Usui Kokusai Sangyo Kaisha Limited, Japan

Filed Feb. 9, 1990, Ser. No. 478,140
Claims priority, application Japan, Feb. 14, 1989, 1-34096
Int. Cl.[5] B21D *15/10*
U.S. Cl. 72—59 **10 Claims**

1. A bellows pipe manufacturing method for forming a bellows pipe having opposed first and second ends comprising,

providing a solid fixed core, a solid movable core and a solid elastic body all of which are dimensioned to be inserted into the pipe,

slidably moving the first end of the pipe over the solid fixed core,

inserting the solid elastic member into the second end of the pipe and into contact with the fixed core,

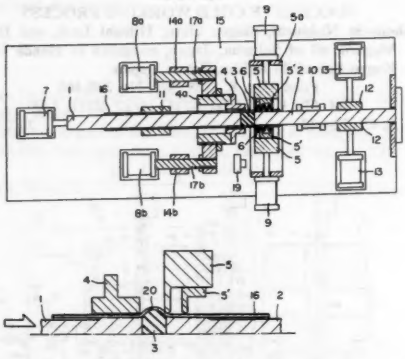
inserting the solid movable core into the second end of the pipe and into contact with the elastic member,

moving the solid movable core toward the solid fixed core for compressing the elastic body in an axial direction of the pipe to resiliently expand the elastic body radially of the pipe such that a peripheral portion of the pipe changes to an annular convex portion,

moving the solid movable core away from the solid fixed

core for permitting the elastic body to resiliently return to an unexpanded condition,

changing the annular convex portion to a bellows portion using a forming and holding means external of the pipe, and



pinching the bellows portion on opposed sides thereof and shifting the pipe to a selected position using the forming and holding means,

wherein the steps from the step of moving the movable core toward the fixed core are repeated with respect to the pipe shifted to the selected position to successively form bellows portions at selected intervals in the pipe.

5,007,268

METHOD AND DEVICE FOR EDGE-FINISHING

Nigel B. Kelly, No. 1 Bellevue, Clifton, United Kingdom BS8 1DA , assignor to Nigel Brian Kelly, Clifton and Originations Limited, Woodland Way, both of, United Kingdom

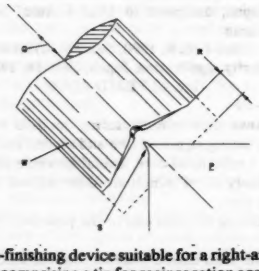
Filed Feb. 5, 1990, Ser. No. 477,186

Continuation of Ser. No. 356,675, May 23, 1989, abandoned, which is a continuation of Ser. No. 209,478 filed as PCT GB 86/00777 on Dec. 18, 1986, published as WO87/03830 on Jul. 2, 1987, abandoned.

Claims priority, application United Kingdom, Dec. 19, 1985, 8531222; Jul. 30, 1986, 8618523

Int. Cl.[5] B25D *1/00*

U.S. Cl. 72—76 **4 Claims**



1. An edge-finishing device suitable for a right-angled edge of a workpiece, comprising a tip for reciprocation against the edge, the tip having a notch with outer flank surfaces which are at an obtuse angle to one another and serve to guide the tip initially onto the workpiece edge, the notch having inner flank surfaces which are at an obtuse angle to one another and serve to beat a burr or other protrusion thin enough to be broken or driven off from the edge and the base of the notch having a curved surface which, in use, determines the finish given to the edge of the workpiece.

5,007,269

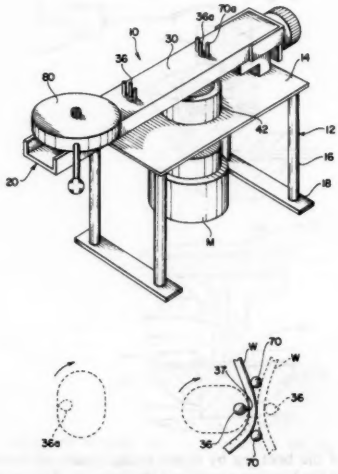
WIRE BENDING DEVICE

Joseph H. Masse, 151 Coggeshall St., New Bedford, Mass. 02746

Filed Nov. 21, 1989, Ser. No. 440,037

Int. Cl.[5] B21D *7/00*

U.S. Cl. 72—173 **7 Claims**



1. A device for bending wire, or strip comprising a housing having a bending station, said housing including a generally elongated horizontally disposed frame having a flat upper generally horizontal surface in part forming said bending station and defining the plane of movement through which said wire moves while being bent, said bending station further including a generally vertically oriented driving pin projecting upwardly through said plane and freely terminating thereabove and guide means including a pair of laterally-spaced vertically-oriented guide pins projecting upwardly through said plane and freely terminating thereabove and disposed laterally to opposite sides of said driving pin so as to form a wire path laterally extending across said bending station frame upper surface within said plane whereby wire fed laterally in said plane to said bending station between said driving pin and said guide pins is contacted by said driving pin and forced against said guide pins so as to bend such wire, said frame including a generally elongated actuation arm having opposed ends longitudinally disposed therein and having at one end thereof said driving pin mounted thereto, means for moving said actuating arm in a longitudinal reciprocating motion including a cam eccentric and pivot means in said actuating arm for regulating the lateral motion of said one end, said wire engaging guide pin means disposed in longitudinal opposition to said driving member and laterally spaced from the driving pin extending further than the lateral extent of the eccentric travel path of said driving pin.

5,007,270

WEB HANDLING APPARATUS FOR METAL RIBBON STOCK

Bernard J. Wallis, 2215 Dacosta, Dearborn, Mich. 48128

Filed Nov. 7, 1989, Ser. No. 432,865

Int. Cl.[5] B21D *53/02*

U.S. Cl. 72—187 **4 Claims**

1. In a metal fin forming machine wherein a metal web is fed from a coil to a plurality of continuously rotating rolls for

corrugating the web, the improvement comprises a web handling apparatus comprising:

a frame,

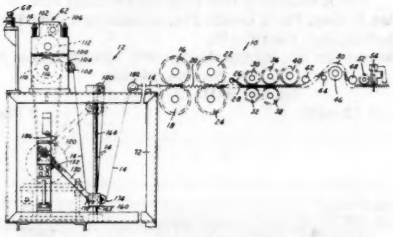
uncoiling means adjacent said coil and fixedly attached to said frame for uncoiling the metal web from the coil,

said uncoiling means having a housing with a pair of drive pinch rollers centrally located and attached to said housing,

an entry guide roller attached to an entrance of said housing for guiding the metal web into said drive pinch rollers and an exit guide roller attached to an exit of said housing for guiding the web from the housing,

a drive motor mounted alongside said frame for driving said pinch rollers,

an accumulator apparatus disposed between said uncoiling means and the metal fin forming machine comprising a pair of vertical tracks on said frame and a movable track roller assembly movably mounted on said vertical tracks for taking up slack in the metal web,



a dancer arm in advance of said metal fin forming machine, pivoted at one end to one of said accumulator rollers over which the web is fed by said uncoiling means,

pivot means for pivoting the other end of said dancer arm about a fixed axis while permitting axial movement thereof relative to said pivot means,

a RVDT transducer attached to the pivot means and electrically connected to said drive motor to provide a signal due to rotary movement of said arm for controlling the speed of said drive motor, and

said movable track roller assembly comprising first and second movable guide rollers supported on said movable track roller assembly and guided on said tracks for vertical movement thereon and

first and second stationary guide rollers supported on said frame and located above said movable track roller assembly, said web being trained in succession from said uncoiling means under said first movable guide roller, thereafter over said first stationary guide roller, under said second movable guide roller, over said second stationary guide roller and into said metal fin forming machine.

5,007,271

DEVICE AND A METHOD FOR EMBOSSING A METAL FOIL

Karl Boegli, Rue des Essertons 2, 2074 Marin, Switzerland

Continuation of Ser. No. 651,752, Sep. 18, 1984, abandoned. This application Oct. 1, 1990, Ser. No. 593,265

Claims priority, application European Pat. Off., Oct. 21, 1983, 83810484.2

Int. Cl.[5] B21D *13/04*

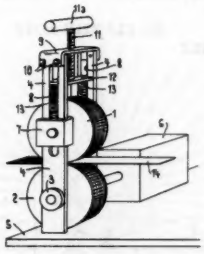
U.S. Cl. 72—196 **11 Claims**

1. A device for embossing a delicate metal foil packaging material comprising:

a pair of opposing, embossing rollers, each having a hard, generally cylindrical surface and an array of pointed pyramid-shaped teeth means for embossing the delicate metal foil extending along said surface in both the axial and circumferential directions, the pitch between adjacent teeth being on the order of about 0.4 millimeters and the size of each tooth being on the order of about 0.25 to 0.3 millimeters;

a drive means operatively connected to drive a first of said rollers;

a second of said rollers being displaceably and adjustably



mounted opposite said first roller and positioned so that the teeth of the first roller are staggered relative to the teeth of the second roller whereby the teeth of the first roller are operable, when engaged by the opposing teeth of the second roller, to synchronously drive the second roller.

5,007,272

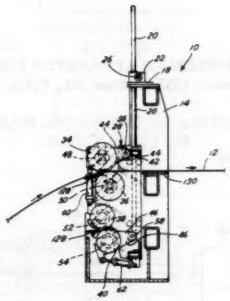
TENSION ROLLER

Douglas S. Matsunaga; Jan W. Slabowski, both of Schiller Park, and Tadeusz Marecki, Chicago, all of Ill., assignors to Braner, Inc., Schiller Park, Ill.

Filed Nov. 9, 1989, Ser. No. 433,754

Int. Cl.[5] B21B *31/08*

U.S. Cl. 72—226 **8 Claims**



1. A tensioning machine positioned along a metal slitting line, said machine constituting means for maintaining tension of slit metal, said machine comprising a main frame, a second frame slidably mounted to said main frame, first and second sets of rotatable tension rollers carried by said second frame, adjustment means connecting each first and second set of tension rollers wherein said first set of tension rollers is in an operating position and engages slit material to apply tension to the slit material prior to recoiling, said second set of tension rollers in a standby position, and drive means for rotating said first set of tension rollers when in the operating position, and means for shifting said second frame relative to said first frame wherein the first set of tension rollers is in a standby position with the second set of tension rollers in said operating position.

5,007,273

FOUR-HIGH ROLL OR SIX-HIGH ROLL STAND HAVING LATERALLY SUPPORTED WORKING ROLLS

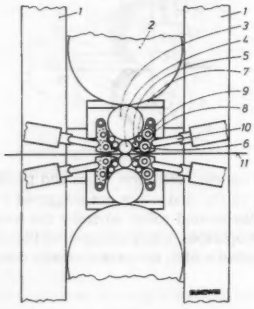
Gerhard Kummerhoff, Hemer, Fed. Rep. of Germany, assignor to Sundwiger Eisenhütte Maschinenfabrik Grah & Co., Hemer-Sundwig, Fed. Rep. of Germany

Filed Jul. 23, 1990, Ser. No. 556,901

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1989, 3925408

Int. Cl.[5] B21B *13/14*

U.S. Cl. 72—242.2 1 Claim



1. Four- or six-high roll stand having laterally supported working rolls (4), each support having a radially unmounted lateral intermediate roll (5) resting against the associated working roll (4), and two radially mounted supporting rollers (6, 8), characterized in that the support has a further lateral intermediate roll (7) and in that one lateral intermediate roll (5) is supported against one of the two supporting rollers (6) and the further lateral intermediate roll (7), which is supported against the other supporting roller (8) and, in the case of a four-high roll stand, against the supporting roll of the said supporting roller and, in the case of a six-high roll stand, against the intermediate roll (3) of the said supporting roller.

5,007,274

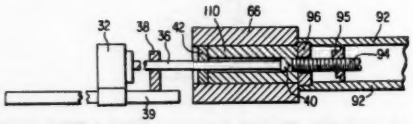
BILLET PRE-PIERCER APPARATUS AND METHOD

Charles L. Stewart, 1733 Addison Rd., Palos Verdes Estates, Calif. 90274

Filed Sep. 20, 1989, Ser. No. 409,800

Int. Cl.[5] B21C *23/08*

U.S. Cl. 72—254 22 Claims



1. An apparatus for pre-piercing billets, comprising:

a generally cylindrical container having first and second open ends for receiving and supporting a generally cylindrical billet;

a mandrel bar mounted adjacent said first end of said cylinder for axial movement along the axis of said cylinder for penetrating the billet;

bolster means disposed adjacent said second end of said cylinder for engaging the billet during penetration of the billet by said mandrel bar, said bolster means including a bolster pin which is axially movable along said axis of said container, said bolster pin having an end which contacts the billet during penetration of the billet by said mandrel bar such that the billet deforms about said end of said bolster pin; and

a movable support carried by said mandrel bar toward the billet during advancement of said mandrel bar prior to pre-piercing the billet, said movable support being configured to enter said generally cylindrical container to engage a portion of said container so as to provide additional structure rigidity to said mandrel bar to resist deflection of said mandrel bar during penetration of the billet.

5,007,275

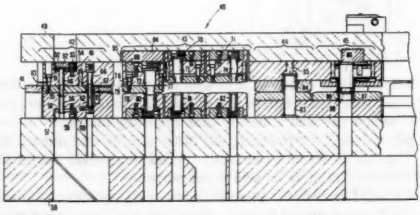
PROGRESSIVE DIE FOR DRAWLESS FIN

Harlan F. Voss, Punta Gorda, Fla., assignor to Tridan Tool & Machine, Inc., Danville, Ill.

Division of Ser. No. 462,618, Jan. 9, 1990. This application Aug. 13, 1990, Ser. No. 566,969

Int. Cl.[5] B21D *28/14, 28/34*

U.S. Cl. 72—335 8 Claims



1. A progressive die for forming a collared hole in a sheet of material comprising:

a main frame;

a plurality of spaced apart first punches mounted on said main frame at a first station and arranged in a pattern about a center point;

a plurality of first bushings mounted on said main frame at said first station and arranged in said pattern to receive said first punches and form a plurality of first holes in a sheet of material leaving material extending between said holes;

a main punch mounted on said main frame at a second station;

a main bushing mounted on said main frame to receive said main punch removing some of said material extending between said holes forming a main hole in said sheet of material and leaving portions of material extending inwardly in said main hole;

a straightening punch mounted on said main frame at a third station;

a straightening busing mounted on said main frame to receive said straightening punch to bend said portions outwardly and form a collared hole in said sheet of material, said straightening punch having an outside diameter larger than said main punch to first draw material continuously around said main hole and then bend said portions outwardly forming a collar continuously surrounding said main hole; and,

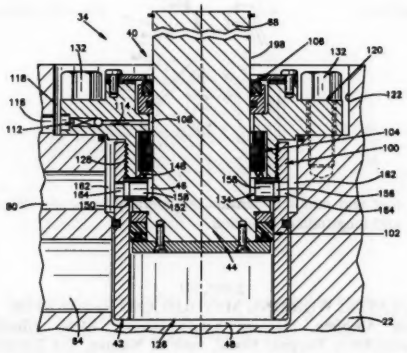
means for forcing a sheet of material through the die and stopping said sheet of material sequentially at said first station, said second station and said third station.

5,007,276

SEAL ARRANGEMENT FOR USE IN A PRESS ASSEMBLY

Paul M. Kadis, Chardon, and Susan E. Pfaff, Seven Hills, both of Ohio, assignors to Teledyne Industries, Inc., Cleveland, Ohio

Filed May 9, 1990, Ser. No. 521,095
Int. Cl.[5] B21D *24/08*
U.S. Cl. 72—351 35 Claims



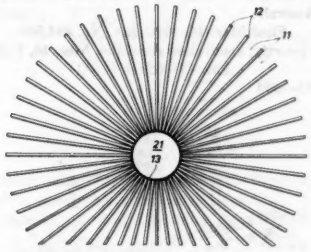
1. A press assembly operable from an open condition to a closed condition to deform a workpiece, said press assembly comprising a first movable member for engaging a first side of the workpiece, a second movable member for engaging a second side of the workpiece, said first member being movable in a first direction toward said second member during operation of said press assembly from an open condition toward a closed condition, said first and second members being movable together in the first direction with at least a portion of the workpiece disposed between said first and second members during operation of said press assembly from the open condition toward the closed condition, and a cushion assembly operable toward a retracted condition to provide a yieldable force opposing movement of at least one of said members in the first direction during operation of said press assembly from the open condition toward the closed condition, said cushion assembly including a cylinder, a piston disposed in said cylinder and cooperating with said cylinder to at least partially define first and second variable volume chambers, a piston rod connected with said piston, said piston rod extending from said piston through said second variable volume chamber to an outer end portion disposed adjacent to one end of said cylinder, first high pressure seal means connected with said piston and disposed in sealing engagement with said cylinder for blocking fluid flow between said first and second variable volume chambers, second high pressure seal means connected with said cylinder and disposed in sealing engagement with said piston rod for blocking fluid flow from said second variable volume chamber along said piston rod, low pressure seal means connected with said cylinder at a location adjacent to said one end of said cylinder and disposed in engagement with said piston rod for blocking contaminants in the environment outside said cylinder from entering said cylinder, said second high pressure seal means and said low pressure seal means cooperating with said cylinder and said piston rod to at least partially define a third chamber for receiving fluid which leaks past said second high pressure seal means, and pressure relief means for exhausting fluid pressure from the third chamber when the fluid pressure in the third chamber reaches a predetermined fluid pressure to thereby prevent exposure of said low pressure seal means to excessive fluid pressures during operation of said press assembly.

5,007,277

METHOD FOR FORMING PRECISION LIQUID/VAPOR SEPARATED BRISTLE ASSEMBLY

Boyd B. Moore, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 30, 1989, Ser. No. 428,527
Int. Cl.[5] B21D *53/00*
U.S. Cl. 72—379.2 4 Claims



1. A method for forming bristles to be used in a bristle assembly comprising:

forming a plurality of slots in a thin rectangular shaped sheet to form a plurality of narrow flat bristles, said slots extending from one edge of the sheet toward the opposite edge, and terminating short of said opposite edge;

bending the portion of the sheet adjacent said opposite edge to form a flange on said sheet, said flange including at least a portion of said slots; and

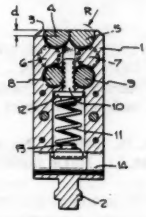
bending said flange into a cylindrical shape with the narrow strips projecting radially outward.

5,007,278

DIE DEVICE

Rolf Haberstock, Rheinhöhe 14, Küssaberg, Fed. Rep. of Germany D-7897

Filed Jan. 16, 1990, Ser. No. 465,385
Claims priority, application Switzerland, Jan. 18, 1989, 154/89
Int. Cl.[5] B21D *5/02*
U.S. Cl. 72—383 21 Claims



1. A die device for use in bending metal stock having:

a body with a flat upper surface;

a pair of die bars in direct meshing engagement supported rotatably around their lengthwise axis having substantially flat upper surface and substantially cylindrical undersurfaces and being arranged contiguously, side-by-side in a lengthwise direction; and

coupling means by which each die bar, of the pair of die bars, is engaged with the other die bar to effect a desired force-coupling such that each die bar rotates in a direction opposite that of the other die bar, a number of teeth being formed in the cylindrical undersurfaces of each die bar, said teeth being contained only in a predetermined angle of the cylindrical undersurface of each die bar, said angle

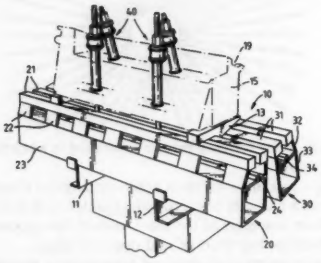
corresponding to a maximum desired angle of rotation of each die bar during a bending process, said coupling means further including said die bars being engaged with each other by cogwheel means adapted to rotate said die bars, which effect the desired force-coupling.

5,007,279

CYLINDER HEAD STRAIGHTENER

Derek L. Miall, 150 Wakefield Street, Bald Hills, Queensland 4036, Australia

Filed Mar. 16, 1990, Ser. No. 494,969
Claims priority, application Australia, Mar. 16, 1989, PJ3254
Int. Cl.[5] B21D *41/00*
U.S. Cl. 72—394 **8 Claims**



1. Apparatus for straightening a cylinder head of an internal combustion engine, said apparatus comprising:

a pair of elongate members adjustably spaced from each other and on which said head is mounted in use, each elongate member having a slot extending longitudinally along its upper side;

at least two tensionable members, each having (i) a retaining member at one end thereof which is captively received in the slot of an associated elongate member yet is adjustable in position along said slot, (ii) a shank portion which in use is located in a respective bore through the head, and (iii) adjustable tensioning means at the other end thereof for applying a force to said head;

whereby said head can be straightened by selected application of forces thereto by said tensionable members at predetermined locations.

5,007,280

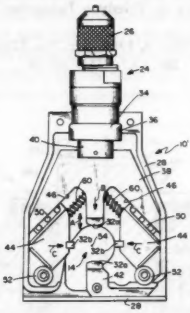
TOOL HEAD FOR USE IN CRIMPING ELECTRICAL CONNECTORS

Robert L. Quinn, St. Petersburg, and Frank Pansari, Jr., Clearwater, both of Fla., assignors to Molex Incorporated, Lisle, Ill.

Filed Jan. 26, 1990, Ser. No. 470,671
Int. Cl.[5] H01R *43/04*
U.S. Cl. 72—402 **15 Claims**

1. In a tool head for use in crimping a connector to a conductor comprising means defining a crimping area of the tool head into which the connector and conductor extend in a longitudinal direction, at least three crimping nibs mounted around said crimping area, each said nib having a connector crimping face and being mounted for radial movement relative to said connector so that a portion of each said face acts to crimp said connector to secure said connector to said conductor during a crimping operation of the tool head, each said nib being mounted in said crimping area of said tool head so that the connector is crimped at spaced points located generally about the circumference of the connector, the improvement comprising:

first and second nibs having substantially identical connector crimping faces each defined by a major dimension and a minor dimension, said major dimension being larger than said minor dimension, and wherein said first nib is oriented such that said minor dimension is generally parallel to said longitudinal direction and said second nib is oriented such



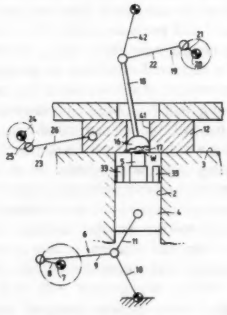
that said minor dimension is generally perpendicular to said longitudinal direction.

5,007,281

PLASTIC WORKING METHOD AND APPARATUS

Syozo Aoshima, Nagoya; Kunio Hirota, Aichi; Hiroshi Sakakibara; Naoyuki Sawai, both of Nagoya, and Takeaki Sato, Kasugai, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Division of Ser. No. 227,301, Aug. 2, 1988, Pat. No. 4,936,125.
This application Apr. 24, 1990, Ser. No. 513,624
Claims priority, application Japan, Aug. 8, 1987, 62-198847; Aug. 8, 1987, 62-198848
Int. Cl.[5] B21J *9/02*
U.S. Cl. 72—406 **3 Claims**



1. In a plastic working apparatus including a frame, a first die having a shaping face, and a second die confronting the first die for mounting thereon a workpiece, the workpiece being depressed by co-operation of the first and second die, thereby applying a plastic work to the workpiece, the improvement comprising;

a die holder means having one end connected to the first die;

moving means for providing swivelling motion through an angle in three dimensional space to the die holder means for depressing the workpiece against the second die so that the first die moves against the workpiece in a compound motion;

guide means cooperating with said die holder for guiding vertical movement of the one end of the die holder, to thus enable vertical reciprocating motion of the first die; and

changing means for changing said angle of the die holder means with respect to an imaginary axis which extends

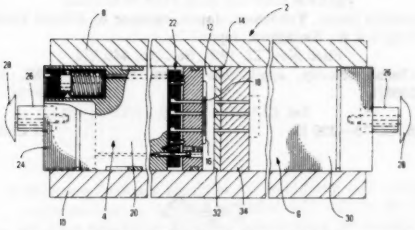
through the workpiece to provide a vertical reciprocating motion of the first die relative to said second die.

5,007,282

STAMPING AND FORMING MACHINE HAVING INTERCHANGEABLE PUNCH SUB-ASSEMBLY

Johannes C. W. Bakermans, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 18, 1990, Ser. No. 467,095
Int. Cl.[5] B21D *37/04*
U.S. Cl. 72—481 **20 Claims**



1. A punch sub-assembly which is intended to be removably secured to a reciprocable punch ram which is cooperable with a die assembly in a stamping and forming machine, the sub-assembly comprising:

punch holder means, stripper plate means, and at least one punch,

the stripper plate means and the punch holder means being coupled to each other by lost motion coupling means which permits relative movement of the stripper plate means between an extended position and a retracted position with respect to the punch holder means, the stripper plate means being spaced from the punch holder means when in its extended position and being adjacent to the punch holder means when in its retracted position,

the punch has a fixed end, an intermediate shank portion, and a free end, the fixed end being fixed to the punch holder means, the shank portion extending from the fixed end towards the stripper plate means and into an opening in the stripper plate means which conforms to the cross-section of the punch,

spring means serving to bias the stripper plate means to its extended position,

fastener means for securing the punch holder means to a punch ram, and

aligning pin means secured to the punch holder means and extending therefrom in the direction which is opposite to the direction of the punch, the aligning pin means having an end portion which is dimensioned for reception in an aligning hole in a punch ram whereby,

a complete punch assembly is produced when the sub-assembly is secured to a punch ram.

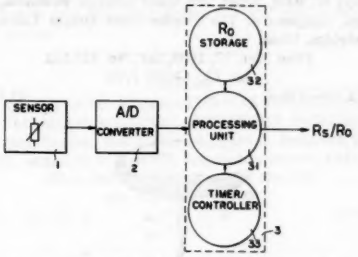
5,007,283

METHOD AND DEVICE FOR PROCESSING MEASURED VALUES

Stefan Ambos, Waiblingen, Fed. Rep. of Germany, assignor to Conducta Gesellschaft fur Meb-und Regeltechnik mbH & Co., Gerlingen, Fed. Rep. of Germany

Filed May 31, 1989, Ser. No. 359,477
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1988, 3819101
Int. Cl.[5] G01N *27/04*; G01D *18/00*
U.S. Cl. 73—1 G **6 Claims**

1. A method for processing measured values in a gas detection device evaluating a resistance variation of a gas sensor forming part of said device for a range of gas concentrations to be measured, comprising the steps of determining and storing at least once a basic resistance value (Ro) of said, without the influence of the gas to be measured, and determining for every subsequent measurement of the gas component, the concentration of which is to be measured, the ratio between a resulting



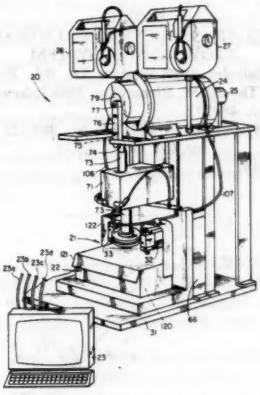
total resistance value (Rs) of said gas sensor dependent on gas concentration and the basic resistance value (Ro), by an arithmetic operation, and using thereafter the value (Rs/Ro) so obtained.

5,007,284

PISTON RING AND LINER WEAR SIMULATOR AND METHOD OF USING SAME

Ralph J. Slone, 945 Driftwood Ave., Columbus, Ind. 47203

Filed Feb. 27, 1990, Ser. No. 485,571
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—120 **20 Claims**



1. A wear simulator for piston rings and cylinder liners comprises:

a piston ring holder having means for receiving a piston ring;

a cylinder liner holder having means for receiving a portion of a cylinder liner;

positioning means connected to said cylinder liner holder for placing a cylinder liner portion received by said cylinder liner holder in contact with a piston ring received by said piston ring holder;

reciprocating means connected to said piston ring holder for imparting a reciprocating stroke to a piston ring received by said piston holder; and

force measuring means cooperatively arranged with said cylinder liner holder for providing a signal corresponding to the level of frictional force between a piston ring received by said piston ring holder and a cylinder liner portion received by said cylinder liner holder.

5,007,285

LOW COST DRIFTER

John M. Dahlen, Duxbury; Narender K. Chhabra, Bedford; Richard K. Araujo, Tewksbury; James R. Scholten, Sudbury; Robert W. Reid, Acton, and Matti Soikkeli, Braintree, all of Mass., assignors to The Charles Stark Draper Laboratory, Cambridge, Mass.

Filed Mar. 17, 1989, Ser. No. 325,522
Int. Cl.[5] G01W *1/00*
U.S. Cl. 73—170 A 11 Claims

1. An economical drifter for following ocean currents comprising:

a buoy that includes a buoy hull of miniataure size, and data transmitting means disposed therein to take local measurement data and transmit said data to a communications satelite over a period of many years at sea; and

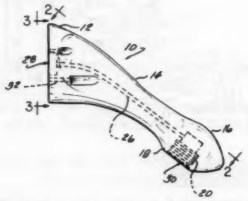
a drogue suspended from said bouy to provide a net slippage error of less than two centimeters per second when said drouge is immersed in an ocean current.

5,007,286

SOLID-STATE TRANSDUCER BASED DYNAMIC FLUID FLOW SENSING SYSTEM

Robert G. Malcolm, 1849 Watkins Lk. Rd., Pontiac, Mich. 48054, and Thomas W. Richardson, 3969 Lakewood, Prayton Plains, Mich. 48020

Filed Aug. 3, 1989, Ser. No. 389,123
Int. Cl.[5] G01G *71/10*
U.S. Cl. 73—181 23 Claims



6. A system for measuring relative fluid velocity with respect to a marine vessel, the system comprising:

solid-state pressure sensing transducer means for generating an electronic output signal in proportion to a sensed dynamic pressure of flowing fluid with respect to said marine vessel;

wherein said solid-state pressure sensing transducer means comprises:

a piezoresistive transducer sensor for sensing dynamic pressure;

constant current source means for exciting said piezoresistive transducer sensor;

differential amplifier means for amplifying a difference between two input signals from said piezoresistive transducer sensor into a differential floating output signal; and

single ended amplifier means for translating said differential floating output signal into a single output signal with reference to a ground; and

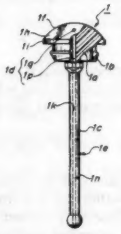
sensor housing means connected to said marine vessel, said sensor housing means having a forwardly facing external surface generally opposed to a direction of fluid flow supporting at least a portion of said transducer means such that asid solid-state pressure sensing transducer means is generally flush with the forwardly facing external surface and directly exposed to fluid flowing past said marine vessel.

5,007,287

FILLER CAP OF JAR FOR WASHER

Kazuhiko Nagai, Yokohama, Japan, assignor to Jidosha Denki Kogyo K.K., Kanagawa, Japan

Filed Nov. 22, 1989, Ser. No. 440,172
Claims priority, application Japan, Nov. 24, 1988, 63-153398[U]
Int. Cl.[5] G01F *13/00, 23/02*
U.S. Cl. 73—290 B 1 Claim



1. A filler cap for a washer jar adapted to hold a supply of detergent liquid comprising:

a stopper portion for plugging a filler hole provided in a top portion of the washer jar;

a transversely extending knob portion connected to and extending upwardly from said stopper portion and having an increasing thickness in the upward direction from the stopper portion to define a pair of finger gripping surfaces on opposite sides thereof;

a pawl portion disposed circumferentially about a lower end of said stopper portion for engagement with the filler hole;

an air hole extending through said stopper and having a first opening disposed on one of said finger gripping surfaces of said knob portion and a second opening in a bottom surface of said stopper portion; and

a tubular gauge having a passage open at both ends thereof connected to said stopper portion with said passage in communication with said hole and adapted to extend into a bottom portion of the washer jar;

whereby upon gripping said plug portion and closing said first opening of said hole by means of a person's fingers and removing said stopper portion from said washer jar an amount of liquid will be retained in said passage of said tubular gauge indicative of the liquid level in the washer jar.

5,007,288

HEAT-RADIATION TYPE LEVEL SENSOR

Kazuyuki Sasaki, and Ichiro Kataoka, both of Susono, Japan, assignors to Yazaki Corporation, Tokyo, Japan

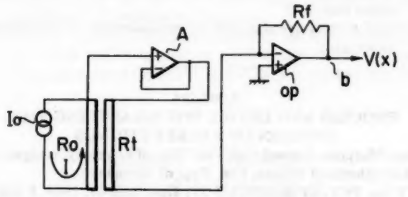
Filed Dec. 1, 1989, Ser. No. 444,341
Claims priority, application Japan, Dec. 2, 1988, 63-156629[U]; Dec. 12, 1988, 63-311927
Int. Cl.[5] G01F *23/24*
U.S. Cl. 73—295 3 Claims

1. A heating radiating type liquid level sensor for indicating the weight of liquid within a tank, comprising:

a liquid level measuring assembly having a liquid level mea-

suring resistor, said liquid level measuring resistor having a first temperature coefficient that causes a change in resistance due to an amount of heat generated when a current from a current source flows therethrough, said liquid level measuring resistor is substantially dipped in said liquid, with a level thereof being measured, when said liquid is filled to a maximum level in said tank;

a buffer amplifier for amplifying and outputting a voltage developed across said liquid level measuring resistor when said current flows therethrough; and



an inverting feedback amplifier for amplifying said voltage outputted from said buffer amplifier, said voltage outputted from said buffer amplifier representing the weight of said liquid within said tank, said inverting feedback amplifier having a feedback resistor and a series input resistor which has a second temperature coefficient, said series input resistor being substantially dipped in said liquid when said liquid is filled to a maximum level in said tank and functioning as a temperature compensating resistor, wherein

said first temperature coefficient is larger than said second temperature coefficient.

5,007,289

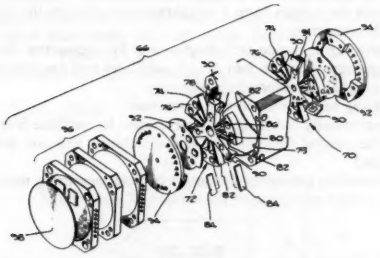
THREE AXIS INERTIAL MEASUREMENT UNIT WITH COUNTERBALANCED, LOW INERTIA MECHANICAL OSCILLATOR

Robert E. Stewart, Woodland Hills, and Samuel N. Fersht, Studio City, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Continuation of Ser. No. 251,918, Sep. 30, 1988, abandoned. This application Mar. 20, 1990, Ser. No. 497,766

Int. Cl.[5] G01R *9/00*

U.S. Cl. 73—510 **4 Claims**



1. A mounting device for the dithered rotation of a measurement unit, comprising:

a mounting member having inwardly extending radial mounting webs with mounting pads on the outer periphery of said mounting member to mount said mounting device;

a rotor member having outwardly extending radial mounting legs for mounting said measurement unit, said legs mounted between said inwardly extending radial mounting webs; and

said inwardly extending radial mounting webs including: web members joining said mounting member to said rotor member; and driving web members on each side of said first mentioned web members for further joining said mounting member to said rotor member and for providing said dithered rotation to said rotor member;

wherein said mounting device is a low inertia mounting device.

5,007,290

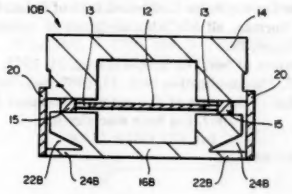
METHOD AND APPARATUS FOR PRODUCING PRELOAD OF AN ACCELEROMETER ASSEMBLY

Bert Egley, Tacoma, and Richard A. Hanson, Redmond, both of Wash., assignors to New SD, Inc, San Francisco, Calif.

Filed Oct. 31, 1989, Ser. No. 429,709

Int. Cl.[5] G01P *15/08*

U.S. Cl. 73—517 R **12 Claims**



1. In an accelerometer in which a generally planar proofmass assembly is supported between upper and lower members clamped together under a compressive load normal to the plane of said proofmass by band means bonded to the upper and lower members, the improvement comprising means forming part of at least one of said members, said last-mentioned means being more compliant in the direction of said compressive load than the rest of said one member and the other of said members, whereby said more compliant means compresses a greater distance under and in the direction of said compressive load than the rest of said one member and the other member, and wherein said band means is bonded to said more compliant means of one member, with the latter in its compressed position, and to the other of said members, whereby to maintain said members including said compliant means under said compressive load.

5,007,291

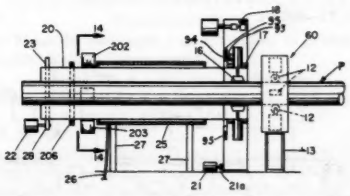
ULTRASONIC INSPECTION APPARATUS WITH CENTERING MEANS FOR TUBULAR MEMBERS

William T. Walters, La Marque, and Carroll R. Thompson, Woodlands, both of Tex., assignors to Scan Systems, Inc., Channelview, Tex.

Filed Oct. 5, 1989, Ser. No. 417,439

Int. Cl.[5] G01N *29/20, 29/26*

U.S. Cl. 73—640 **6 Claims**



1. An apparatus for positioning devices for the transmission of acoustic energy in non-contacting fixed spaced relation to the outer diameter surface of a tubular member in a procedure for the non-destructive testing and inspection of the tubular member, said apparatus comprising:

a plurality of contact elements comprising at least two pairs of rollers in which the rollers of each pair are disposed in contact with the outer surface of the tubular member in alignment with each other and the central axis of the tubular member in diametrically opposed positions relative thereto and said pairs of rollers are disposed and aligned in mutual orthogonal relationship,

a proximity sensor for sensing the distance of said devices from the tubular member and generating an electrical signal corresponding to said sensed distance, and

driving means responsive to said proximity sensor signal for driving the rollers of each pair in a linear radial direction with respect to said tubular member axis whereby the axis is moved to coincidence with the center of the circular array of transmitting devices.

5,007,292

MULTICOMPONENT TRANSDUCER

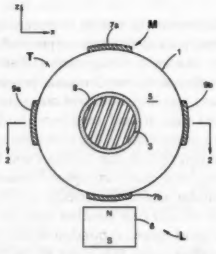
Christopher Crowe; Ralph L. Cordell, both of Tulsa, and Seun K. Kahng, Norman, all of Okla., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 239,367, Aug. 31, 1988, Pat. No. 4,905,517. This application Nov. 13, 1989, Ser. No. 435,841

The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.

Int. Cl.[5] G01P *15/08*

U.S. Cl. 73—654 **10 Claims**



1. A multicomponent transducer, comprising:

(a) a nonconductive, nonmagnetic inertial mass, wherein the inertial mass is coated with a conductive coating;

(b) means for ferrohydrodynamically levitating the inertial mass, whereby the inertial mass is responsive to motion along at least two separate axes; and

(c) motion sensing means for sensing components of motion of the inertial mass along the separate axes.

5,007,293

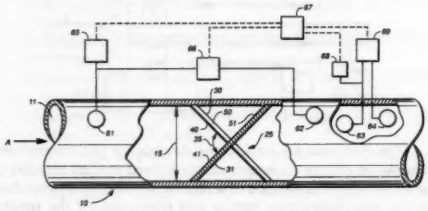
TWO-PHASE FLOW METER

Douglas B. Jung, 3209 Franz Valley Rd., Santa Rosa, Calif. 95404

Filed Dec. 16, 1988, Ser. No. 285,735

Int. Cl.[5] G01F *1/74, 15/08*

U.S. Cl. 73—861.04 **11 Claims**



1. A flow meter for measurement of a two-phase liquid and vapor mixture flowing within a conduit, said conduit having an inside surface, said flow meter comprising:

spin generating element means for generating a spin to said two-phase mixture flowing within said conduit, said spin generating means comprising a pair of blades presenting opposing planar surfaces to said flowing two-phase mixture, said spin generating element means conditioned to separate said liquid and said vapor and to urge said liquid to flow against said inside surface of said conduit in the form of an annulus, and to urge said vapor to flow through said annulus;

first measurement means for measurement of the liquid-vapor rate, and

second measurement means for measurement of the annular vapor rate.

5,007,294

PROCESS AND DEVICE FOR MEASURING THE TENSION OF RACKET STRINGS

Klaus Matjasic, Schwalmtal, Fed. Rep. of Germany, assignor to Karl-Eberhard Mauve, Fed. Rep. of Germany

PCT No. PCT/EP88/00957, § 371 Date Jun. 21, 1989, § 102(e) Date Jun. 21, 1989, PCT Pub. No. WO88/03709, PCT Pub. Date May 5, 1989

PCT Filed Oct. 25, 1988, Ser. No. 378,228

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1988, 3736219

Int. Cl.[5] G01L *5/10*

U.S. Cl. 73—862.41 **20 Claims**

1. A method of measuring the tension of racket strings wherein the strings form a membrane mounted on the racket, which comprises:

providing a device including means for measuring the frequency at which said device oscillates and for producing a signal corresponding thereto;

affixing said device to said membrane;

aperiodically inducing said membrane to oscillate freely at the natural frequency of said membrane and said device; and

converting the signal produced by said measuring means to a value representing the tension of said strings.

5,007,295

MAGNETOELASTIC FORCE TRANSDUCER

Pär Gustafsson; Jarl Sobel, and Lars Ornholmer, all of Västeras, Sweden, assignors to Asea Brown Boveri AB, Västeras, Sweden

Filed Jan. 3, 1990, Ser. No. 460,515

Int. Cl.[5] G01L *1/12*

U.S. Cl. 73—862.69 **8 Claims**

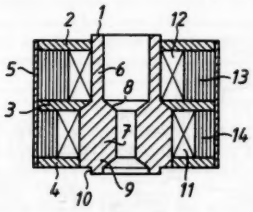
1. A magnetoelastic force transducer comprising a force-absorbing rotationally symmetrical core of magnetoelastic material provided with two excitation windings supplied with alternating current, two measuring windings, flux closure

yokes in the form of a first, a second, and a third flange, and a surrounding sleeve, said core comprising:

a thin-walled tubular section and a thick-walled tubular or solid section with an intermediate first transition zone and a second transition zone located at the other end of the tick-walled tubular or solid section, said second zone changing into a short zone with the same outer diameter as the outer diameter of the thin-walled tubular section;

a first force-dependent magnetic circuit consisting of the thin-walled tubular section of the core, the first transition zone, the first and second flanges and that part of the sleeve which lies between these flanges and an excitation winding and a measuring winding;

a second force-independent magnetic circuit consisting of the thick-walled tubular or solid section of the core, the first and second transition zones, the second and the third



flanges and the remaining part of the sleeve, and an excitation winding and a measuring winding;

the frequency of the supply voltage being chosen such that the penetration depth into the magnetoelastic material is much smaller than the wall thickness of the thick-walled tubular section and much smaller than the radius of the thick-walled section when this thick-walled section is formed as a solid part;

the numbers of turns of the excitation windings being adapted such that the magnetic conditions are the same in the two magnetic circuits;

the measuring windings being connected in opposition; and

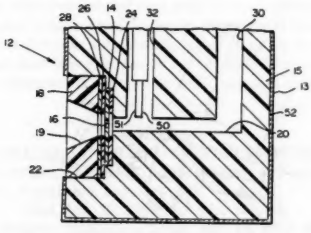
the numbers of turns of the measuring windings being adapted such that the output voltage of the transducer amounts to the desired level in the case of an unloaded transducer.

5,007,296

APPARATUS FOR MEASURING A LIQUID SPECIMEN

Takahito Hukuhara, Kakogawashi, Japan, assignor to 501 Toa Medical Electronics Co., Ltd., Kobe, Japan

Filed Oct. 19, 1989, Ser. No. 424,343
Claims priority, application Japan, Jan. 26, 1989, 1-7912
Int. Cl.[5] G01N *15/14*
U.S. Cl. 73—864.87 **7 Claims**



1. A particle detector for detecting particles in an electrolyte, comprising:

a body;

means for forming an aperture in said body;

a fluid path in said body communicating with said aperture;

a syringe liquid path in said body communicating with said aperture;

said syringe liquid path terminating in said fluid path;

a first electrode in said body;

said first electrode being disposed in said syringe liquid path near a junction of said syringe liquid path with said fluid path;

a second electrode external to said body;

a colorimeter in series flow with said fluid path; and

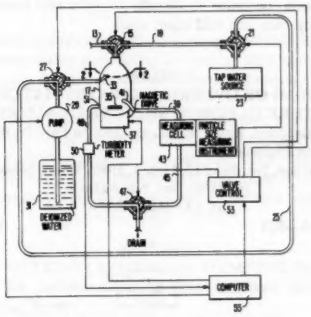
means for preventing direct electrical conduction through said body, whereby electrical conduction between said first and second electrodes is constrained to flow in said electrolyte through said aperture.

5,007,297

PARTICLE SIZE MEASURING SYSTEM WITH AUTOMATIC DILUTION OF SAMPLE

Holger T. Sommer, Greenbelt, Md., assignor to Pacific Scientific Company, Newport Beach, Calif.

Filed Dec. 6, 1988, Ser. No. 280,334
Int. Cl.[5] G01N *15/00*
U.S. Cl. 73—865.5 **6 Claims**



1. A particle measuring system comprising a mixing chamber for receiving a sample of particles to be measured, means to continuously introduce a diluent into said mixing chamber while withdrawing a mixture of said diluent and said sample from said mixing chamber, measuring means to receive a mixture of said diluent and said sample from said mixing chamber in a fluid stream and to measure the size of the particles entrained in said fluid stream, a stirrer within said mixing chamber, and control means to rotate said stirrer within said mixing chamber while automatically repeatedly reversing the direction of rotation of said stirrer, wherein said control means reverses the direction of rotation of said stirrer after an interval which varies randomly between limits.

5,007,298

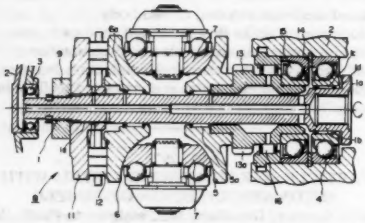
TOROIDAL-TYPE INFINITELY VARIABLE TRANSMISSION

Hisashi Machida, Maebashi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1989, Ser. No. 404,824
Claims priority, application Japan, Oct. 31, 1988, 63-275073
Int. Cl.[5] F16H *15/08, 13/00*
U.S. Cl. 74—200 **1 Claim**

1. In a toroidal-type infinitely variable transmission comprising an input shaft having one end connected to a rotation drive, an output disk and an input disk successively disposed on said input shaft from a rotation drive side of said input shaft with a predetermined interval between said input disk and said output disk, power rollers rollably and tiltably disposed between said input disk and said output disk, and a pressing mechanism having a loading cam and disposed on said input shaft at a rear

side of said input disk and having a pressure adjusting elastic member interposed between a flange of said input shaft formed at said rotation drive side thereof and an axial opposing surface of a bearing disposed at the rotation drive side of said input shaft for receiving an axial force of said input shaft, the improvement comprising:



a needle-shaped roller bearing disposed between said input shaft and said bearing receiving the axial force of said input shaft to allow said input shaft to slide in an axial direction with a reduced sliding resistance against a spring force of said elastic member when a thrust in an axial direction increases to thereby prevent slip between said loading cam and said input shaft.

5,007,299

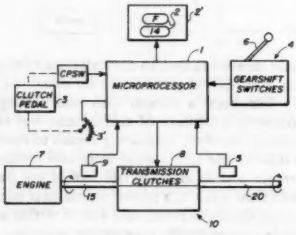
METHOD OF OVERRIDING RATIO MATCHING FEATURE IN POWER SHIFT TRANSMISSIONS

Garth H. Bulgrien, Ephrata, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.

Division of Ser. No. 444,312, Dec. 1, 1989. This application May 10, 1990, Ser. No. 521,630

Int. Cl.[5] B60K *20/10*

U.S. Cl. 74—335 **17 Claims**



1. A method of controlling the operation of a vehicle transmission operably connected to an engine and having a plurality of clutches for selectively interconnecting an engine driven input drive shaft, an output drive shaft operatively coupled to ground engaging wheels of said vehicle to effect movement thereof over the ground, and a plurality of gears rotatably housed in said transmission in driving relationship with said input and output drive shafts such that a selective engagement of said clutches will effect a varying of the speed of operation of said output shaft for a given speed of operation of said input shaft, said transmission further having an electrical control system including a microprocessor responsive to switches actuated by manual movement of a gearshift means between a plurality of positions, including forward, reverse, and neutral positions, for controlling said clutches in the transmission, said microprocessor being operable to engage a ratio matching routine when said gearshift means is placed in said neutral position to select a gear having a gear ratio substantially equivalent to the ratio derived from the respective speeds of rotation of said input and output shafts, the method comprising:

signalling said microprocessor for an upshift or a downshift of said transmission while engaged in said ratio matching routine; and

exiting said ratio matching routine and entering a gear selection routine in said microprocessor while said gearshift remains in said neutral position to effect a selection of an alternative gear other than the gear selected by said ratio matching routine.

5,007,300

MULTI-AXIS HAND CONTROLLER

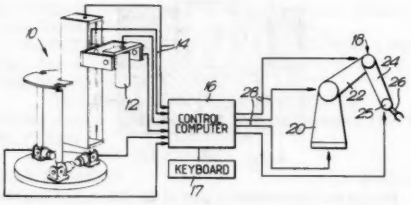
Kumar V. Siva, Lightwater, United Kingdom, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 22, 1990, Ser. No. 468,249

Claims priority, application United Kingdom, Mar. 3, 1989, 8904955

Int. Cl.[5] G05G *9/00*; B25J *3/00*

U.S. Cl. 74—471 XY **2 Claims**



1. A hand controller whereby an operator can control movements of a mechanism, the controller comprising a base, a support frame connected to the base by three parallel non-telescopic link arms with universal joints at each end so as to allow displacements of the frame relative to the base, and an operating handle connected by four serially arranged links to the support frame, the said links respectively allowing rotation of the handle about three independent axes and linear displacement of the handle relative to the support frame.

5,007,301

COMBINED STEERING AND CONTROL HEAD FOR A FLOOR CONVEYOR VEHICLE

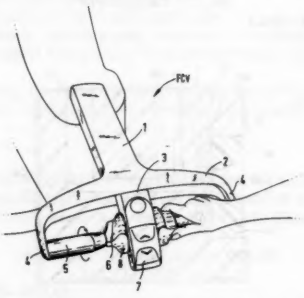
Robert Powell, Pforzheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Nov. 30, 1989, Ser. No. 443,327

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1988, 3840800

Int. Cl.[5] B62D *1/06*; G05G *1/10*

U.S. Cl. 74—557 **8 Claims**



1. A combined steering and control head for use with a floor conveyor vehicle of the type having a fork lifting mechanism and a driving mechanism and being manually guided by way of

a shaft coupled to the combined steering and control head, said combined steering and control head comprising:

a steering head at the end of the shaft;

a shaft horn on the combined steering and control head and located adjacent the end of the shaft;

handles on the combined steering and control head arranged one on each side of the shaft horn;

driving control means disposed next to the horn for controlling the drive mechanism; and

a lifting and lowering switch means arranged adjacent an end face of the horn for controlling a lifting mechanism of a lifting fork;

wherein the driving control means includes an approximately disk-shaped segment having at a circumference thereof a first actuating surface which extends transversely with respect to the handles, and

a second actuating surface arranged at the circumference of the disk shaped segment and opposite to the first actuating surface such that at least one of the actuating surfaces can be gripped together with an operating surface of the lifting and lowering switch means.

5,007,302

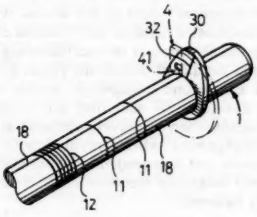
ALIGNMENT APPARATUS FOR A STROKE CONTROLLING MECHANISM OF A MACHINE TOOL

Tien C. Chen, No. 11, Chiu Chia Lane, Sung Chu Li, Pei Tun Chu, Taichung, Taiwan

Filed Sep. 29, 1989, Ser. No. 414,693

Int. Cl.[5] F16H *53/00;* **G01B** *3/02*

U.S. Cl. 74—568 R **3 Claims**



1. An alignment apparatus in combination with a stroke controlling mechanism, said stroke controlling mechanism comprising a cam shaft with a number of cams disposed thereon; said alignment apparatus comprising at least one circular line being formed around said cam shaft, at least one longitudinal line being formed on an outer surface of said cam shaft in a direction parallel to a longitudinal axis of said cam shaft, and a check line being formed on a side surface of each said cam; said cams being disposed on said cam shaft by aligning said check line of each said cam with said longitudinal line and by aligning each said cam with each said circular line; a removable C-shaped protractor mounted on said cam shaft for aligning of said cams on said cam shaft when said check line of each said cam is not aligned with said longitudinal line; a notch which has a diameter substantially equal to an outer diameter of said cam shaft being formed in a center of said protractor so that said protractor is engageable onto said cam shaft.

5,007,303

VARIABLE INERTIAL MASS FLYWHEEL

Hiroshi Okuzumi, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 13, 1989, Ser. No. 337,488

Claims priority, application Japan, Apr. 13, 1988, 63-92300

Int. Cl.[5] F16F *15/10, 15/18;* **F16D** *27/00*

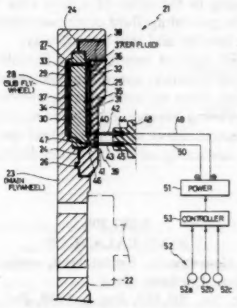
U.S. Cl. 74—573 F **5 Claims**

1. A variable inertial mass flywheel connected to an engine via an engine output shaft, which comprises:

(a) a main flywheel member connected to the engine output shaft and rotatable therewith;

(b) a subflywheel member disposed opposingly to said main flywheel member and rotatable relative to said main flywheel member;

(c) at least one pair of electrodes formed on both opposing surfaces of said main flywheel member and said subflywheel member;



(d) a power supply controller, connected to said electrodes, for controllably generating an electric field between said electrodes formed on said main flywheel member and said subflywheel member; and

(e) a fluid disposed between said electrodes, a viscosity of said fluid being varied according to the intensity of the electric field generated between said electrodes to controllably couple or decouple said subflywheel member to or from said main flywheel member via said fluid.

5,007,304

FLUID FILLED ELASTOMERIC DAMPING DEVICE

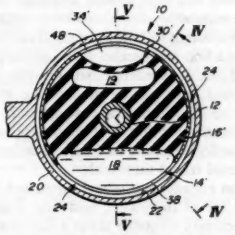
Takanobu Ide, Isehara, Japan, assignor to Nissan Motor Company, Ltd., Japan

Filed May 15, 1989, Ser. No. 352,382

Claims priority, application Japan, May 18, 1988, 63-65414[U]

Int. Cl.[5] F16F *15/22, 15/10;* **G05G** *1/00*

U.S. Cl. 74—573 F **2 Claims**



1. An elastomeric damping device comprises:

concentric rigid inner and outer sleeves having a space therebetween;

a resilient member within said space connecting said inner and outer sleeves together and thereby subdividing said space into two pockets;

a working chamber in one of said pockets enclosed between said resilient member and said outer sleeve, said working chamber containing a fluid;

a flexible wall member integral with said resilient member, disposed in the other of said pockets;

a compensation chamber within the other of said pocket

enclosed between said flexible wall member and said outer sleeve;

a generally tubular bracket fitted on said outer sleeve; and

a passageway defined between said bracket and said outer sleeve and communicating with said working chamber and said compensation chamber to provide fluid communication therebetween;

in which said outer sleeve is axially separated to include first and second sleeve sections and a spacer section interposed between said first and second sleeve sections, said spacer section being in the form of a split ring and having an opening for providing fluid communication between said working chamber and said passageway;

in which said resilient member and flexible wall member having a pair of axially spaced annular sealing lips projecting outward from an outer circumferential surface, said sealing lips being interposed between matched ends of said first and second sleeve sections and said spacer section and sealingly contacting an inner circumferential wall of said bracket.

5,007,305

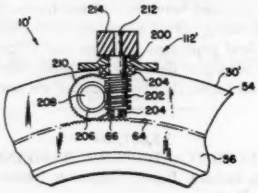
RING BALANCER

Rene Linder, Genestrenio, Switzerland, assignor to Schmitt Industries, Inc., Portland, Oreg.

Division of Ser. No. 201,482, Jun. 1, 1988, Pat. No. 4,951,526. This application Aug. 20, 1990, Ser. No. 570,320

Int. Cl.[5] F16F *15/22*

U.S. Cl. 74—573 R **12 Claims**



1. A balancer for dynamically balancing a machine having an elongated rotatable element power driven in at least a first rotational direction about a longitudinal rotational axis, comprising:

an annular case with first and second radially extending annular sidewalls and a central aperture extending fully through said first and second sidewalls and sized to receive the rotatable element therein with the rotatable element projecting fully through said central aperture and beyond said first and second sidewalls to permit positioning of said case at an intermediate position on the rotatable element, said case having an interior annular chamber extending about said central case aperture in substantially coaxial alignment with the rotatable element;

means for fixedly attaching said case to the rotatable element for rotational travel therewith;

a first friction engagement wheel supported by said case for rotational travel therewith, said first engagement wheel being selectively rotatable about a first engagement wheel rotational axis in first wheel first and second opposing rotational directions;

first contact members mounted to the machine in position to rotate as said first engagement wheel as said first engagement wheel passes by, said first contact members being selectively movable to frictionally contact said first engagement wheel to selectively rotate said first engagement wheel in said first wheel first or second rotational direction as said first engagement wheel travels by said first contact members carried by said rotating case;

a second friction engagement wheel supported by said case for rotational travel therewith, said second engagement wheel being selectively rotatable about a second engagement wheel rotational axis in second wheel first and second opposing rotational directions;

second contact members mounted to the machine in position to rotate said second engagement wheel as said second engagement wheel passes by, said second contact members being selectively movable to frictionally contact said second engagement wheel to selectively rotate said second engagement wheel in said second wheel first or second rotational direction as said second engagement wheel travels by said second contact members carried by said rotating case;

first and second eccentrically weighted balancing members coaxially and rotatably mounted within said case chamber for rotational travel with said case, each said balancing member having a rotational axis in substantially coaxial alignment with the rotatable element, and each said balancing member being selectively rotatable in first and second opposing rotational directions relative to the other of said balancing members and to said case, each said balancing member having an engagement portion extending at least partially about said balancing member;

first force transmission means, supported by said case for rotational travel therewith, for drivably interconnecting said first engagement wheel and said first balancing member engagement portion to convert rotation of said first engagement wheel in said first wheel first and second rotational directions into rotation of said first balancing member in said first balancing member first and second rotational directions, respectively; and

second force transmission means, supported by said case for rotational travel therewith, for drivably interconnecting said second engagement wheel and said second balancing member engagement portion to convert rotation of said second engagement wheel in said second wheel first and second rotational directions into rotation of said second balancing member in said second balancing member first and second rotational directions, respectively, whereby said first and second engagement wheels are rotated in selected directions by said first and second stationary contact means when selectively operated as said first and second engagement wheels revolve with said case to progressively and independently rotate each of said first and second balancing members until the machine is dynamically balanced.

5,007,306

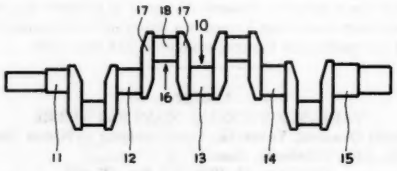
CRANKSHAFTS WITHOUT TORSIONAL VIBRATION RESONANCE

Yun S. Wei, 6501 Stewart Rd., Apt. 13, Cincinnati, Ohio 45236

Continuation-in-part of Ser. No. 866,937, May 27, 1986, which is a continuation-in-part of Ser. No. 584,005, Feb. 27, 1984, abandoned, which is a continuation-in-part of Ser. No. 366,486, Apr. 8, 1982, abandoned. This application Oct. 19, 1989, Ser. No. 423,939

Int. Cl.[5] F16C *3/04*

U.S. Cl. 74—595 **3 Claims**



1. In a piston engine crankshaft having main journals and cranks, the improvement comprises whereas the ratio of natural frequencies of torsional vibration of at least one crank behind the frontmost crank to its preceeding adjacent crank ranging from 1.05 to 1.25 by making the outside diameters of at

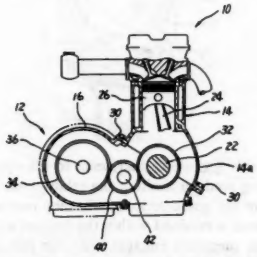
least one pair of the adjacent main journals different to one another.

5,007,307

POWER PLANT FOR VEHICLES

Tsuyoshi Tamazawa, Yokohama, and Yoshimasa Hayashi, Kamakura, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 26, 1989, Ser. No. 343,214
Claims priority, application Japan, Apr. 26, 1988, 63-101354
Int. Cl.[5] F16H *57/02*
U.S. Cl. 74—606 R **10 Claims**



1. A power plant for an automotive vehicle comprising:

(A) a first independent unit comprising an engine having a cylinder block,

a crankshaft supported on said cylinder block, and

a crankshaft gear installed on said crankshaft;

(B) a second independent unit comprising a transmission arranged in parallel with said crankshaft and including a transmission casing,

an input shaft arranged in parallel with said crankshaft and supported on said transmission casing,

an input gear installed on said input shaft,

an intermediate shaft interposed parallelly between said input shaft and said crankshaft and supported on said transmission casing, and

an idler gear which is installed on said intermediate shaft and which meshes with said crankshaft gear and said idler gear; and

(C) means for detachably attaching said first unit to said second unit.

5,007,308

LINE PRESSURE CONTROL FOR AUTOMATIC TRANSMISSION

Yasushi Narita, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 19, 1989, Ser. No. 382,120
Claims priority, application Japan, Jul. 19, 1988, 63-178057; Aug. 2, 1988, 63-192010; Aug. 23, 1988, 63-207369
Int. Cl.[5] B60K *41/18*
U.S. Cl. 74—866 **14 Claims**

1. A line pressure control system for an automatic transmission when the automatic transmission undergoes a shifting operation where the line pressure is used to activate a friction element, the line pressure control system, comprising:

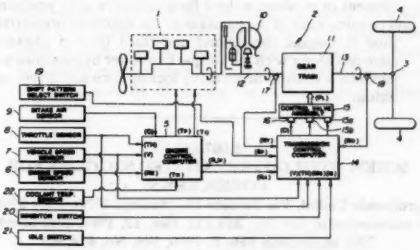
means for storing a target value of a predetermined variable that is representative of a quality of the shifting operation occurring under predetermined circumstances;

means for determining an actual value of said predetermined variable for the shifting operation after occurrence of the shifting operation and generating an actual value indicative signal indicative of said actual value determined;

means for detecting circumstances surrounding said occurrence of the shifting operation;

means for comparing said circumstances detected with said predetermined circumstances and generating a deviation indicative signal when a deviation therebetween fails to fall in a predetermined range;

means for comparing said actual value indicative signal with said target value when said deviation indicative signal is absent and generating a comparison result signal indicative of a difference between said actual value measured and said target value; and



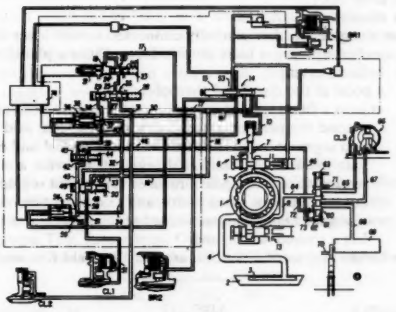
means for adjusting the magnitude of the line pressure in response to said comparison result indicative signal during the next occurrence of the shifting operation in such a direction as to decrease said difference indicated by said comparison result indicative signal, whereby the friction element is activated by the line pressure adjusted during the next occurrence of the shifting operation.

5,007,309

AUTOMATIC TRANSMISSION CONTROL SYSTEM AND METHOD OF OPERATION

Robert W. Lemon, Farmington Hills, and John Arzoian, Dearborn, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 8, 1989, Ser. No. 363,653
Int. Cl.[5] B60K *41/22*; F16H *61/14*
U.S. Cl. 74—869 **5 Claims**



1. A method of controlling the operation of an automatic transmission of a vehicle having a fluid torque converter with a bypass clutch connecting a drive shaft from a prime mover to an output shaft of a speed change gear assembly of the transmission and a plurality of friction engaging elements arranged in the speed change gear assembly to provide a plurality of forward speed ratios between the input shaft and the output shaft of the speed change gear assembly upon selective engagement of the engaging elements by selectively enabling or preventing the flow of fluid from a source of pressurized fluid through two passages in a hydraulic circuit by controlling only two solenoid values in response to signals generated by a central processing unit that processes input signals derived from sensed vehicle operating parameters comprising:

opening the second passage to the source of pressurized fluid

to cause engagement of first and second friction engaging elements to produce a first forward drive gear condition while maintaining the first passage closed;

closing both passages from the source of pressurized fluid to cause engagement of only the first friction engaging element to produce a second forward drive gear condition;

opening the first passage to the source of pressurized fluid while maintaining the second passage closed to the pressurized fluid to engage only a third friction engaging element to produce a third forward drive gear position;

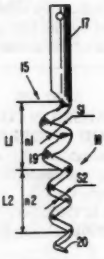
and opening both of the passages to the source of pressurized fluid to engage the second and third friction engaging elements along with the torque converter bypass clutch to produce a fourth, direct drive lockup forward drive condition.

5,007,310

SCREW WITH DIFFERENTIATED SECTIONS FOR CORKSCREWS

Ferdinando Cellini, Via Percoto 11, Maniago (PN), Italy 33085

Continuation of Ser. No. 283,833, Dec. 13, 1988, abandoned.
This application Feb. 5, 1990, Ser. No. 474,303
Claims priority, application Italy, Dec. 22, 1987, 83517 A/87
Int. Cl.[5] B67B *7/00*
U.S. Cl. 81—3.45 **3 Claims**



1. A corkscrew comprising:

a lever body;

a support element; and

an elongate member pivotally connected to said lever body and comprising a helix portion formed into a plurality of helices, having:

a point at the distal end thereof; and

at least a first segment comprising at least one helix and a second segment comprising at least one helix, said second segment being closer to said distal end of said elongate member than said first segment; wherein a cross-section of said elongated member in said first segment is constant and has a first width, and a cross-section of said elongate member in said second segment is constant and has a second width; and

wherein said second width is smaller than said first width.

5,007,311

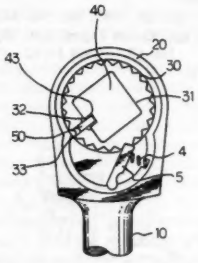
SLIDABLE DRIVING STUD FOR USING IN SOCKET WRENCH AND ITS MANUFACTURING PROCESS

Clark J. Lee, 429-6 Chung Cheng Rd, Fu Liao Li, Tsao Tun Town, Nantou Hsien, Taiwan

Filed Aug. 10, 1990, Ser. No. 565,429
Int. Cl.[5] B25B *13/46*
U.S. Cl. 81—61 **1 Claim**

1. An improved ratchet wrench comprising

a head, a handle extending therefrom, a ratchet wheel rotatably mounted in the head having a polygonal receiving hole along an axis perpendicular to the handle, ratchet means for connecting the ratchet wheel to rotate with the handle around said axis in only one direction, and a driving stud having a length greater than the length of the receiving hole and having a longitudinally extending guide groove in one side thereof, said driving stud being slidably mounted in the receiving hole and maintained in position by a pin mounted in the ratchet wheel and engaging within the guide groove on the driving stud, wherein the improvement comprises the longitudinal guide groove extending from one end to the opposite end of the driving stud, and a pair of socket detent members being mounted



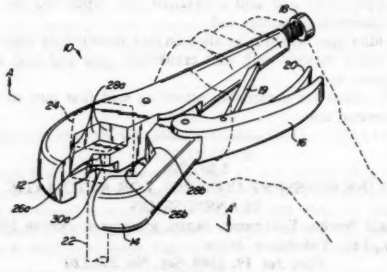
on the guide groove and adjacent to the opposite ends of the driving stud for limiting the relative movement of the pin within the guide groove, whereby one portion of the driving stud is retained within the ratchet wheel as one of the detent members engages with the pin and the other portion of the driving stud protrudes from one side of the ratchet wheel with another detent member thereon to retain a socket.

5,007,312

WRENCH FOR METAL TUBING CONNECTORS

Carey G. Bailey, 2171 Shetland Rd., Livermore, Calif. 94550

Filed Jan. 11, 1990, Ser. No. 463,353
Int. Cl.[5] B25B *7/02*
U.S. Cl. 81—426.5 **5 Claims**



1. A double jawed locking hand vise comprising locking means for locking the jaws of said vise in a preselected closed position;

adjustment means for setting said closed position;

said jaws of said vise comprising co-facial surfaces having gripping means for securely holding a tubular piece therebetween;

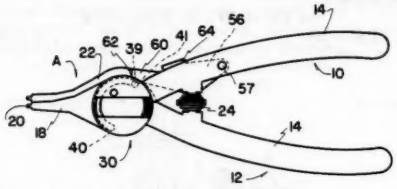
a first securing means for securing a first nut of preselected size and shape against rotation with respect to said tubular piece held in said gripping means, a second securing means for alternatively securing a second nut of preselected size and shape against rotation with respect to said tubular piece held in said gripping means, said gripping means being concentrically disposed with said first or second nut, wherein each of said securing means comprises substantially planar surfaces angled with one another to accommodate said respective nut of preselected size and shape when said jaws are in a closed or a substan-

tially closed position, to thereby prevent rotation of said respective nut with respective to said tubular piece.

5,007,313
PLIERS

James R. Jeromson, Jr., Aurora, and J. Edward C. Anderson, Moreland Hills, both of Ohio, assignors to Milbar Corporation, Chagrin Falls, Ohio

Continuation of Ser. No. 182,016, Apr. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 46,851, May 7, 1987, abandoned. This application Jul. 10, 1989, Ser. No. 378,448
Int. Cl.[5] B23P *19/04*
U.S. Cl. 81—486 **27 Claims**



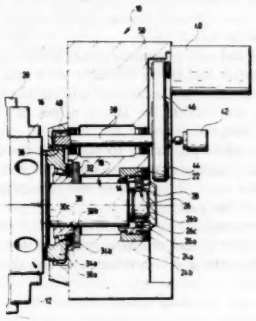
1. A plier tool comprising:
(a) a pair of levers each including a handle portion, a jaw portion including a tip and a boss portion fixedly interconnecting the handle and jaw portions;
(b) a pivot interconnecting the levers in a permanently intended, boss portion juxtaposed, but relatively movable and slidable relationship;
(c) the tool including a work position selection means to permit the shifting of the levers in a sliding motion as the boss portions are maintained in their juxtaposed, slidable relationship by the pivot, the motion including relative longitudinal movement such that one tip is passed by the other as the levers are moved between a first working position in a crossed relationship and a second working position in a side by side relationship and such said one tip is passed by the other as the levers are moved from the second to the first position; and,
(d) the work position selection means including a position locating means for retaining the bosses in at least one of the working positions when the tool is in use, the locating means being constructed such that when the tool is used in one of the working positions reaction forces occasioned by work operation apply position retention force to the locating means and when in the other of the working positions the selection means overcomes reaction forces tending to move the levers from the working position.

5,007,314
LATHE

Dietmar F. Hafla, Hohengehren, and Guenther Sommer, Esslingen, both of Fed. Rep. of Germany, assignors to Index-Werke Komm. -Ges. Hahn & Tessky, Esslingen, Fed. Rep. of Germany

PCT No. PCT/DE89/00004, § 371 Date Aug. 22, 1989, § 102(e) Date Aug. 22, 1989, PCT Pub. No. WO89/06176, PCT Pub. Date Jul. 13, 1989
PCT Filed Jan. 6, 1989, Ser. No. 415,290
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1988, 3800403
Int. Cl.[5] B23B *3/00*
U.S. Cl. 82—120 **4 Claims**

1. A lathe comprising a main work spindle mounted for numerically controlled rotation about a main spindle axis, a tool turret having a turret body with several stations as well as a turret shaft fixedly connected to said turret body and being mounted on a turret slide for rotation about a turret axis, at least one of said turret body stations being provided with a driveable tool, said lathe also comprising turret drive means for numerically controlled rotation of said turret body and turret shaft about the turret axis, the improvement comprising:
(a) turret shifting means for axially displacing said turret relative to said slide between a first and a second axial position;
(b) releaseable locking means for securing said turret against rotation, said locking means comprising a first ring of teeth connected with said turret in a rotationally fixed manner and a second ring of teeth connected with said slide in a rotationally fixed manner, said first and second rings of teeth being arranged adjacent to the turret body and displaceable relative to one another in the direction of the turret axis by displacing the turret by said shifting

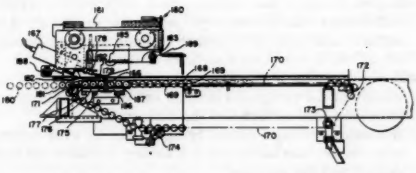


means so that the teeth of said two rings are interengaged when the turret is in its second axial position;
(c) a first bearing means for said turret, said first bearing means being arranged adjacent to said locking means and having two conical races, one of which being connected with the turret so that the two conical races are displaceable relative to one another in the direction of the turret axis in order to make said first bearing means free of radial play when the turret is in its first axial position; and
(d) a second means for said turret, said second bearing means being spaced from said first bearing means in the direction of the turret axis and being axially displaceable as a unit together with the turret.

5,007,315
AUTOMATIC SIDEWALL SERVICER

Joseph H. Alexander; Stanley L. Radcliffe; Martin N. Robertson, all of Summit County; Eugene A. Bator, and John E. Anderson, both of Portage County, all of Ohio, assignors to General Tire, Inc., Akron, Ohio

Division of Ser. No. 77,705, Jul. 24, 1987. This application Nov. 21, 1988, Ser. No. 274,260
Int. Cl.[5] B26D *5/00*
U.S. Cl. 83—72 **5 Claims**



1. Apparatus for cutting a strip of unvulcanized rubbery material comprising:
(a) a plurality of rollers freely rotatable about parallel axes lying in a common plane for supporting the strip to be cut

and for conveying the strip in a direction perpendicular to said roller axes;

(b) a guide means mounted above the roller and extending parallel to the roller axes and beyond both lateral edges of the strip conveyed on the rollers;

(c) a carrier mounted on the guide means and slidable back and forth along the guide means in a direction parallel to the roller axes;

(d) a cutting anvil located between two of said plurality of rollers, said anvil having a head surface located above the rollers, said head surface being sloped at an acute angle to the plane of the roller axes in the same direction as the direction in which the strip is to be conveyed;

(e) an ultrasonic cutter also mounted on the carrier and including an ultrasonically vibrated knife blade which is inclined at the same angle as the sloped head surface of the anvil and has a portion resting on top of said sloped head surface of the anvil;

(f) said anvil and said ultrasonic cutter both being connected to said carrier and being movable with said carrier back and forth parallel to the axes of said rollers between positions that are outside the lateral edges of the strip conveyed on said rollers;

(g) means in close proximity to the anvil for clamping the strip to the rollers on both the upstream and downstream sides of the anvil, in respect of the direction of travel of the strip on the rollers; and

(h) a sensor movable with the carrier which senses a thickness of the strip and controls speed at which the cutter moves along the anvil in relation to the thickness of the strip.

5,007,316

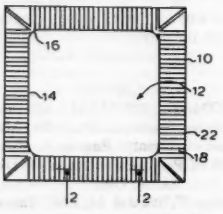
APPARATUS FOR CUTTING SHEET MATERIALS

Stephen O. Ketcham; Paul W. Ortiz, both of Mt. Vernon; Jamie S. Jarvis, Evansville, and Clyde S. McCray, Mt. Vernon, all of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation of Ser. No. 943,457, Dec. 19, 1986, abandoned. This application Mar. 14, 1990, Ser. No. 494,932

Int. Cl.[5] B26F *1/14*

U.S. Cl. 83—167 **9 Claims**



6. A punch and die assembly for cutting from sheet of synthetic, polymeric resin, an article, which comprises;

a cutting die block for use in a punch and die assembly, which comprises;

a die plate having a face surface, a back surface and a peripheral surface which extends perpendicular to said die face surface, said peripheral surface defining an outer boundary of the face and back surfaces of the plate;

said plate having a punch receiving aperture located inwardly of the peripheral surface and communicating between the face surface and the back surface;

said punch receiving aperture being defined by a die cutting edge on the face surface at a boundary between the face surface and the aperture;

collecting means comprising a plurality of open grooves extending from the die cutting edge towards the peripheral surface for collecting slivers and bits of waste material generated as a result of such cutting;

a punch adapted by size and configuration to pass into the aperture of the block; and

wherein said particle is cut only along the die cutting edge and said collecting means provides a repository for said slivers and bits of waste material.

5,007,317

APPARATUS FOR THE PROGRAM CONTROLLED LONGITUDINAL AND TRANSVERSE CUTTING OF WORKPIECE PLATES

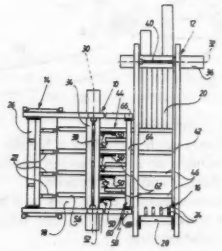
Erwin Jenkner, Lindenstrasse 13, Gechingen, Fed. Rep. of Germany D-7261

Filed Apr. 10, 1990, Ser. No. 508,061

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1989, 3911639

Int. Cl.[5] B27B *5/06*; B23D *47/04*

U.S. Cl. 83—256 **3 Claims**



1. An apparatus for the program-controlled cutting of workpiece plates into multiple workpiece plate pieces, said apparatus being operably arranged for longitudinal cutting of edge strip stacks from workpiece plate stacks, subsequent longitudinal sectioning of said workpiece plate stacks into workpiece plate piece stacks, transverse sectioning of said plate piece stacks cut from said workpiece plate stacks, and transverse sectioning of said edge strip stacks, said apparatus for the program-controlled cutting of workpiece plates into multiple workpiece plate pieces comprising:

a longitudinal cutting saw for cutting said edge strip stacks from said workpiece plate stacks and for cutting said workpiece plate stacks into said workpiece plate piece stacks;

a first advancing device for feeding said workpiece plate stacks to said longitudinal cutting saw;

a first support table for supporting said workpiece plate stack as they are fed to said longitudinal cutting saw by said first advancing device;

a transverse cutting saw for cutting said workpiece plate piece stacks and said edge strip stacks, operably arranged generally perpendicular to said longitudinal cutting saw;

a second advancing device for feeding said workpiece plate piece stacks and said edge strip stacks to said transverse cutting saw;

a second support table for supporting said workpiece plate piece stacks and said edge strip stacks as they are fed to said transverse cutting saw by said second advancing device;

a transport device for moving said edge strip stacks and said workpiece plate piece stacks from said longitudinal cutting saw to said second support table; and

a pick-up device for collecting each said edge strip stack as it is cut from a workpiece plate stack, up to a predetermined number of edge strip stacks,

said pick-up device including a lifting device for raising said collected edge strip stacks to a holding position to permit said workpiece plate piece stacks to pass under said collected edge strip stacks and advance to said transverse cutting saw,

said lifting device being operably arranged to collect said

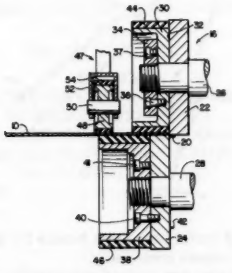
predetermined number of edge strip stacks so that once said predetermined number of edge strip stacks has been collected, operation of said longitudinal saw is interrupted, said lifting device lowers said edge strip stacks from said holding positions for advancing to said transverse saw for transverse cutting.

5,007,318

METAL STRIP EDGE TRIMMING APPARATUS

Laurence C. Cox, Portage; Raymond Dugan; Daniel D. Evans, both of Chesteron; Robert Griffith, Hamlet; Terry L. Handley, Westville, and Jeffrey J. Leeper, Valparaiso, all of Ind., assignors to National Steel Corporation, Pittsburgh, Pa.

Filed Dec. 20, 1989, Ser. No. 453,599
Int. Cl.[5] B23D *25/12*
U.S. Cl. 83—425.2 **8 Claims**



1. For use in an edge trimming operation for trimming the opposite marginal side edges of a running length of metal strip, a pair of edge trimmers positioned one adjacent each side edge of the strip, said edge trimmers each comprising an upper cutter disc mounted above the plane of the strip and a lower cutter disc mounted below the plane of the strip, said upper and lower cutter discs being mounted for rotation about spaced parallel horizontal axes extending transversely of the strip and cooperating to receive and trim the strip along a trim line extending closely adjacent one marginal edge of the strip, the improvement wherein each said edge trimmer further comprises,

first strip edge stabilizing means mounted for coaxial rotation with said lower cutter disc, said lower cutter disc having a cylindrical outer surface and said first strip edge stabilizing means having a cylindrical outer surface extending inward from and forming an extension of the cylindrical surface of said lower cutter disc in contact with the bottom surface of a strip to be trimmed,

second strip edge stabilizing means mounted for coaxial rotation with said upper cutter disc, said second strip edge stabilizing means having a cylindrical outer surface extending inward from said top cutter disc and contacting the top surface of the strip adjacent said trim line in opposition to said lower cutter disc and a portion of said first stabilizing means,

said first stabilizing means extending inwardly from said trim line a distance greater than said second stabilizing means, and

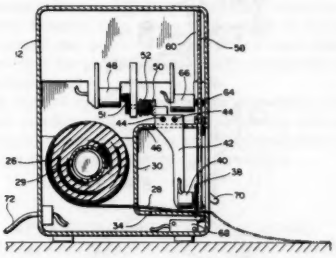
movable holddown roll means mounted for rotation about an axis parallel to the axis of said upper and lower cutter discs and contacting the top surface of a strip in opposition to said first stabilizing means at a location of said second stabilizing means.

5,007,319

PLASTIC WRAP DISPENSER

Joseph M. Armbruster, 2700 NE. 47th St., Lighthouse Point, Fla. 33064

Filed Aug. 7, 1987, Ser. No. 82,482
Int. Cl.[5] B26D *1/18*; B65H *75/32*
U.S. Cl. 83—488 **6 Claims**



1. A dispenser for sheet film material comprising a housing, means within said housing for rotatably supporting a supply roll of film material, said housing including a discharge slot receiving the film material therethrough, said housing including a supporting surface extending horizontally outwardly from the slot and forming the sole support for the free end of the film material to enable the free end to be grasped and manually pulled to unwind a desired quantity of film material from the supply roll, powered means located outwardly of and spaced from the discharge slot for severing the film material with the free end of the film material being released from grasp and resting on the supporting surface before and after being cut, said means for severing the film material including a circular cutter blade rotatably supported and having its rotational axis disposed above the supporting surface, a motor driving said blade, a supporting carriage for said motor and blade, means guiding movement of the carriage, means moving the carriage and the blade and motor transversely of the film material for cutting the film material, said supporting surface including a groove extending parallel to the discharge slot for receiving a peripheral portion of the cutter blade to assure that the film material is cut by the cutter blade, and a closure door concealing the cutter blade, discharge slot, supporting surface and groove receiving the periphery of the cutter blade, said door being mounted for movement between open and closed positions.

5,007,320

COMPASS

Stuart Craig, Willowdale, and Earl Helland, Toronto, both of Canada, assignors to Inventive Ideas Incorporated, Toronto, Canada

Continuation-in-part of Ser. No. 209,956, Jun. 22, 1988, abandoned. This application Jun. 22, 1989, Ser. No. 369,235
Int. Cl.[5] B26D *5/00*
U.S. Cl. 83—745 **26 Claims**

1. A compass for sweeping an arc of a circle on a target material comprising:

a base having a lower surface engagable with said material;

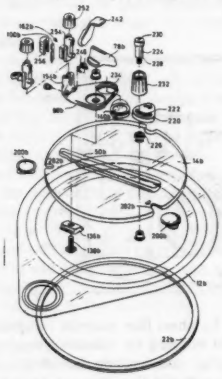
a support member rotatably supported on said base;

a toolholder mounted on said support member and being moveable therewith to sweep an arc of a circle upon rotation of said support member about an axis relative to said base, said toolholder including radial adjustment means permitting the radial position of said toolholder with respect to said axis to be varied;

a toolpost mounted on said toolholder for supporting a tool, said toolpost permitting movement of said tool relative to said support member in a direction generally normal thereto between an operative position wherein said tool extends beyond said lower surface to contact said material

and an inoperable position wherein said tool is retracted from said lower surface; and

depth adjustment means allowing the position of said tool in said operative position to be varied, said depth adjustment



means being operable independently of said radial adjustment means such that the position of said tool in said operative position does not change when the radial position of said toolholder is adjusted.

5,007,321

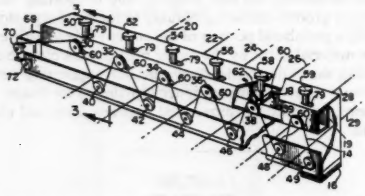
POWER OPERATED STRING VIBRATING DEVICE FOR SELECTIVELY VIBRATING A STRING OF A STRINGED MUSICAL INSTRUMENT

Frederick J. Mastroni, Jr., 89 Gregory Pl., Richboro, Pa. 18954

Filed May 16, 1989, Ser. No. 352,785

Int. Cl.[5] G10D *3/16*

U.S. Cl. 84—325 **9 Claims**



1. A power operated string vibrating device for selectively vibrating a string of a stringed musical instrument having at least one string, said string vibrating device comprising:

a support member positioned on said musical instrument proximate said string;

a first pulley rotatably mounted on said support member on a first side of said string for receiving a cable;

a second pulley for receiving a cable rotatably mounted on a shaft which is mounted on said support member on a second side of said string, said support member receiving said shaft in a cam-like slot for guiding said second pulley and shaft between a first position and a second position;

a spring interconnected between said shaft and said support member for biasing said second pulley and shaft towards said first position;

an endless cable drivingly interconnected to said pulleys, said cable being alternately drivingly engaged between said first and second pulleys such that when said second pulley is in said first position, said cable does not contact the string and, when said second pulley is in said second position, said cable contacts the string;

an electric motor positioned on said support member and having a drive pulley drivingly engaged to said cable for driving said cable, said electric motor driving said cable at selectively variable speeds;

at least one guide pulley for guiding said cable between said first and second pulleys and said drive pulley; and

a finger engageable button secured to said shaft and slidably positioned on said support member for selectively moving said second pulley between said first and second positions, whereby when said second pulley is in said first position, said string does not produce sound and when said second pulley is in said second position, said string is vibrated by said cable and thereby produces sound.

5,007,322

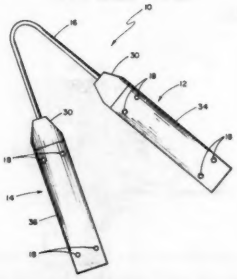
PERCUSSION IMPLEMENT HANDLE

Farrell Morris, 726 Vosswood Dr., Nashville, Tenn. 37205

Filed Jan. 3, 1990, Ser. No. 460,503

Int. Cl.[5] G10G *5/00*

U.S. Cl. 84—453 **5 Claims**



1. A new and useful percussion handle for grasping plural percussion implements comprising:

(a) means for grasping each of said percussion implements;

(b) means to bias said grasping means apart;

(c) said biasing means comprises a frame joining said grasping means;

(d) each of said grasping means comprises a handle for releasably grasping said percussion implement;

(e) said grasping means comprises a partially cylindrical handle releasably attached to a semicylindrically shaped member acting in combination to form substantially a cylinder; and

(f) a channel to receive said implement formed by said connection of said handle and said section.

5,007,323

POLYPHONIC ELECTRONIC MUSICAL INSTRUMENT

Ryuji Usami, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1988, Ser. No. 226,936

Claims priority, application Japan, Aug. 7, 1987, 62-196455; Aug. 17, 1987, 62-203200

Int. Cl.[5] G10H *7/00*

U.S. Cl. 84—607 **6 Claims**

1. A polyphonic electronic musical instrument for simultaneously generating a plurality of tone signals through a time-division process on a plurality of channels, comprising;

first memory means for storing tone waveform data;

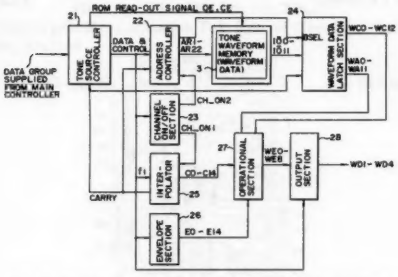
second memory means for storing waveform control data including access data for accessing said first memory means for each channel;

allotting means for successively allotting on a time-division basis a channel time for each of a plurality of channels as a process time of that channel;

dividing means for dividing each channel time alloting by said allotting means into a plurality of divisions; and

read/write control means for functioning in at least one

division of time provided by said dividing means for accessing said first memory means by reading out the waveform control data corresponding to the current channel time from said second memory means, and also for functioning in at least one of the remaining divisions of time for writing the waveform control data of a given channel designated at that time to be changed in an area of said second memory means corresponding to said given channel.



5,007,324

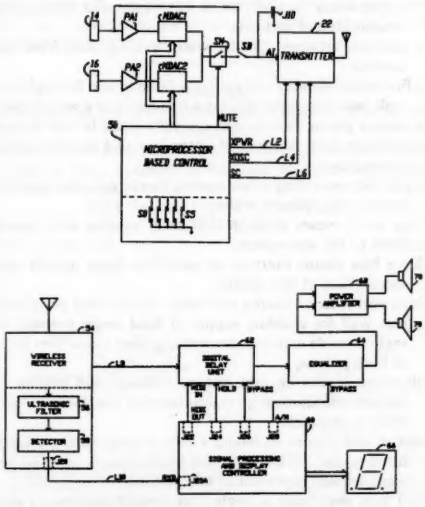
SPECIAL EFFECTS CONTROL FOR PORTABLE MUSICAL INSTRUMENT

Glenn DeMichele, 2217 West Leland Ave., Chicago, Ill. 60625

Filed May 14, 1989, Ser. No. 347,815

Int. Cl.[5] G10H *1/46, 1/02*

U.S. Cl. 84—741 **45 Claims**



1. In combination:

a portable musical instrument having audio-frequency vibration-sensing means responsive to sound-indicating vibrations from said instrument for converting said vibrations into sound-indicating electrical signals;

communication means for communicating said sound-indicating signals to remote audio amplifier means adapted for connection to loudspeaker means;

user-operable first alteration means affixed to said instrument and operable over a range of states for altering said sound-indicating signals over a corresponding range of signal alterations;

generating means associated with said instrument for generating a range of status-indicating electrical signal conditions indicative of the chosen state of said first alteration means;

visual display means adapted for placement remote from said instrument for providing a readily visible indication at the remote location from where the operator is playing the instrument and powered by a source remote from said instrument for producing a plurality of different display conditions; and

display control means responsive to said status-indicating signal conditions for selectively actuating said display means to produce a display condition indicative of said chosen state of operation of said instrument.

5,007,325

APPARATUS FOR CLEARING MINES

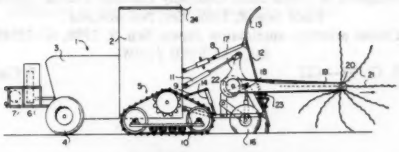
David M. MacWatt, Elgin, Scotland, assignor to Aardvark Clear Mine Limited of Shevock Farm, Insch, Scotland

Continuation of Ser. No. 380,778, Jul. 18, 1989, abandoned, which is a continuation of Ser. No. 170,066, Mar. 14, 1988, abandoned, which is a continuation of Ser. No. 816,206, Jan. 6, 1986, abandoned. This application Feb. 22, 1990, Ser. No. 485,776

Claims priority, application United Kingdom, Jan. 10, 1985, 8500569

Int. Cl.[5] F41H *11/16*

U.S. Cl. 89—1.13 **4 Claims**



1. A flail vehicle comprising a tractor unit and rotatable ground-beating means mounted at one end of the tractor unit, the ground-beating means comprising a shaft which is rotatable about a central axis, said central axis being substantially parallel to the ground and transverse to the direction of travel of the vehicle, said shaft carrying a distributed array of flexible flail chains extending radially outwardly from said shaft, each of said flail chains having a direct connection to said shaft, the distribution of flail chains within said array being such that each said connection is angularly and axially offset around and along said shaft from the nearest adjacent said connection, and wherein any two of said connections in said array which are adjacent in a direction substantially parallel to said central axis of the shaft are mutually spaced apart by at least thirty centimeters as measured along the shaft in a direction parallel to said central axis.

5,007,326

CAST SINGLE PLATE P900 ARMOR

William A. Gooch, Jr., Bel Air; Matthew S. Burkins, Baltimore, both of Md.; Leo F. Mills, Bettendorf, Iowa; James W. Ogilvy, Detroit, Mich., and Antonio J. Ricchiazzi, Havre de Grace, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 16, 1990, Ser. No. 468,324

Int. Cl.[5] F41H *5/04*

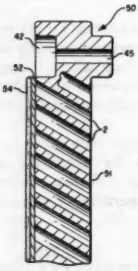
U.S. Cl. 89—36.02 **4 Claims**

1. A defensive applique armor for covering and protecting a substrate which may be exposed to attack by projectiles:

said applique comprising a flat armor plate composed of

castable metal having predetermined thickness and having a plurality of slotted holes;

said slotted holes being sufficiently small so that a projectile cannot pass therethrough;



said slotted holes being set at obliquity; and

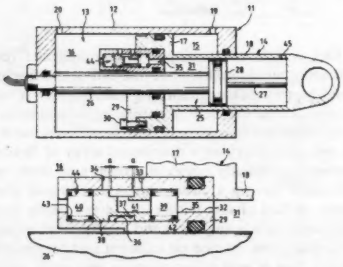
said applique further comprising a thin skin castable metal layer which increases the maintainability or protecting ability of said armor.

5,007,327

SERVO ACTUATOR

Toshio Kamimura, and Shigeyuki Takagi, both of Gifu, Japan, assignors to Teijin Seiki Company Limited, Osaka, Japan

Filed Sep. 8, 1989, Ser. No. 404,566
Claims priority, application Japan, Sep. 9, 1988, 63-225897
Int. Cl.[5] F15B *11/08*
U.S. Cl. 91—422 **7 Claims**



1. A hydraulic servo actuator adapted to control a driven member in accordance with an operation of a servo circuit through which servo oil flows, comprising:

a main cylinder and an associated main piston, said main piston being reciprocal within said cylinder and said main cylinder divided by said piston into a first chamber and a second chamber which are adapted to be in fluid communication with said servo circuit;

damper means provided within said main piston for dampening reciprocating movement of said main piston, said damper means having a sub piston and a detecting rod coupled at one end to said sub piston and at the other end to said main cylinder for defining a damper chamber in association with said main piston, and

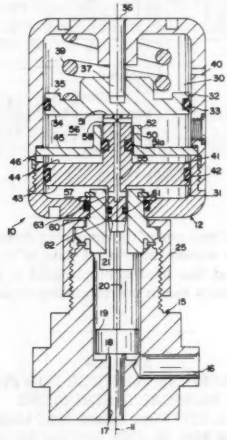
throttle means for imparting a predetermined restriction to the servo oil that flows between said second chamber and said damper means along a predetermined passage formed within said piston.

5,007,328

LINEAR ACTUATOR

John H. Otteman, 4005 Hecker Pass Hwy., Gilroy, Calif. 95020

Filed Jul. 24, 1989, Ser. No. 384,715
Int. Cl.[5] F01B *7/00*
U.S. Cl. 92—63 **1 Claim**



1. A linear actuator having an axis, said actuator comprising:

a body having a peripheral sidewall, and inside said side wall, a first and second cylinder wall axially spaced apart and concentric on said axis;

a coupler for releasably mounting said body to a next assembly, enabling the body, when the coupler is loosened, to be rotated around said axis;

a partition between cylinder walls dividing them from one another;

a first piston slidably and sealingly fitted in said first cylinder wall, said first piston having a first face and a second face;

a second piston slidably and sealingly fitted in said second cylinder wall, said second piston having a first face and a second face;

a partition providing a fluid sealing barrier between said first and second cylinder walls;

vent ports means through said body venting said second faces to the atmosphere;

force bias means exerting an axial bias force against said second face of first piston;

inlet port means entering said body through said peripheral side wall for enabling supply of fluid under pressure to regions inside said cylinder walls, applied to said first faces of both pistons;

abutment means on said pistons enabling said pistons to contact one another for transmission of bias force to hold them in abutment;

one of said pistons including a post sealingly and slidingly fitted to said partition to pass therethrough, so as to accomplish said abutment of said pistons;

said inlet port being a single port passing into one of said cylinder walls, and in which by-passing conduitry extends through said post between regions facing both of said first faces;

and in which the uppermost of said pistons includes a central axially extending recess, and in which a guide pin is fixed to said body, projecting axially into said recess in a sliding close-fitting relationship to prevent the piston from cocking, and to serve as a limit stop for upward movement of said piston.

5,007,329

WORKING PISTON, IN PARTICULAR FOR A BRAKE BOOSTER

Bernd Toepperwien, Rossdorf, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 11, 1989, Ser. No. 336,171

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1988, 3813144

Int. Cl.[5] F01B *19/00*

U.S. Cl. 92—98 D 10 Claims

1. A working piston for a brake booster, comprising a substantially plate-shaped piston (3) is centrally held by a guide housing (1) and is axially guided in a working cylinder, and wherein a rolling diaphragm (2) which, on its outer circumference, is sealingly fixed on the inside wall of the working cylinder and which substantially covers the piston surface, is held immediately adjacent the central mounting of the plate-shaped piston (3) in a groove (8) in the guide housing (1) wherein the centrally held plate-shaped piston (3) has a surrounding arching portion (10) by means of which the plate-shaped piston rests on a corresponding supporting surface (11, 12) on the guide housing (1).

5,007,330

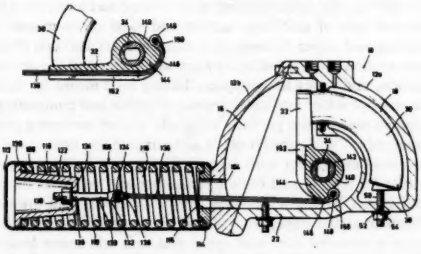
ROTARY ACTUATOR AND SEAL ASSEMBLY FOR USE THEREIN

William B. Scobie, Houston, and Robert A. Frenzel, Waller, both of Tex., assignors to Keystone International Holdings Corp., Houston, Tex.

Filed Dec. 18, 1989, Ser. No. 452,207

Int. Cl.[5] F01C *9/00*

U.S. Cl. 92—120 23 Claims



1. A rotary actuator comprising:

a housing defining an arcuate chamber, said housing including a first monolithic portion and a second portion, said arcuate chamber being completely contained within said first portion, said first portion defining an aperture in open communication with said arcuate chamber, said second portion being adjacent to said first portion such that said second portion faces said aperture;

a piston disposed in said housing for reciprocable movement in said arcuate chamber;

a shaft journaled in said housing and connected to said piston, said shaft being rotated in response to movement of said piston;

a seal means disposed between said piston said housing for effecting sealing between said piston and said housing;

means to introduce fluid pressure into said housing to effect movement of said piston in a first direction; and

means to effect movement of said piston in an opposite, second direction.

20. An apparatus for sealing between relatively movable members comprising:

a first member, said first member having a surface defining a bore, a peripheral groove being formed in said surface in surrounding relationship to said bore, said groove having peripherally extending, spaced first and second side walls;

a second member disposed in said bore and relatively movable with respect to said first member;

a seal assembly for effecting fluid tight sealing between said first and second members, said seal assembly including:

a resilient, generally elliptical seal ring, said second member being received in and sealingly engaged by said seal ring;

a generally flexible band in surrounding, engaged relationship with said seal ring;

said seal assembly being received in said groove such that said resilient seal ring is in sealing engagement with said first and second side walls in said groove, said band serving to prevent outward movement of said seal ring away from said second member, said groove having a depth sufficient to permit said seal assembly to float.

5,007,331

DRY RUN-HIGH PRESSURE STAGE OF A MULTISTAGE PISTON COMPRESSOR

Peter Greiner, Damooser Weg 15, DE- 7981 Vogt, and Hubert Pflüger, Schlier-Wetzisreute, both of Fed. Rep. of Germany, assignors to Peter Greiner, Vogt, Fed. Rep. of Germany

Filed Dec. 12, 1989, Ser. No. 449,576

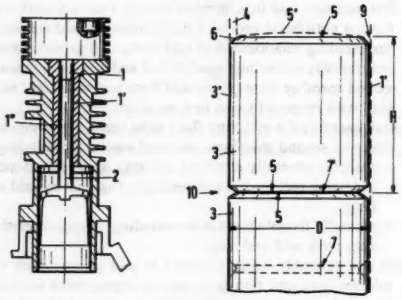
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1988, 3841833

Int. Cl.[5] F16J *15/18*

U.S. Cl. 92—165 R 7 Claims

1. A dry-run, high-pressure stage of a multi-stage piston compressor comprising a cylinder defining a compression chamber and having a working barrel whose interior wall defines a bore, a piston including a tappet guided for reciprocal displacement in the working barrel bore, the tappet having a free end extending into the bore, and at least two cylindrical self-lubricating sealing elements loosely placed on top of each other on the free tappet end and sealing the working barrel bore from the compression chamber, the cylindrical sealing elements having a height corresponding at least to the diameter thereof, circumferential guide surfaces extending at least along

a portion of the circumferential surfaces of the sealing elements and defining an annular gap with the interior working barrel



wall, and two end faces having circumferentially extending chamfers.

5,007,332

PISTON FOR PISTON MACHINES

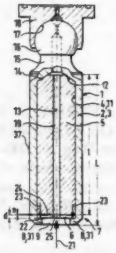
Ludwig Wagenseil, Vöhringen, Fed. Rep. of Germany, assignor to Hydromatik GmbH, Elchingen, Fed. Rep. of Germany

Filed Mar. 30, 1990, Ser. No. 502,460

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1989, 3912213

Int. Cl.[5] F01B *31/00*; F04B *21/04*; F16J *1/00*

U.S. Cl. 92—181 R **11 Claims**



1. A piston for piston machines comprising a hollow body, open at least at its free end, having an axial cavity in which there is a filler piece at least partly filling the latter and consisting of a material of lower specific gravity than the material of the piston, said filler piece being secured in said cavity and being held axially in said cavity by a locking element arranged at the free end of said hollow body and a spring arranged between said locking element and said filler piece, wherein said filler piece is inserted axially into said cavity and the axial securing and locking is effected solely by said spring and said locking element, said spring being pretensioned by said locking element so far that it acts against said filler piece with a spring force greater than the maximum inertial forces of the filler piece acting against said spring to be expected when in operation.

5,007,333

AUTOMATIC COFFEE MACHINE

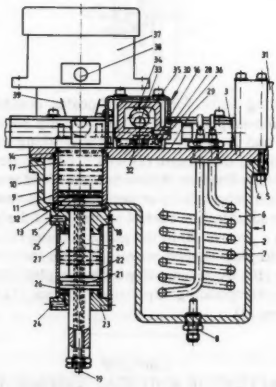
Peter Sager, Boppelsen, Switzerland, assignor to HGZ Maschinenbau AG, Dallikon, Switzerland

Filed Nov. 27, 1989, Ser. No. 441,514

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1988, 3843568

Int. Cl.[5] A47J *31/42*

U.S. Cl. 99—286 **10 Claims**



1. An automatic coffee machine, in particular for the preparation of individual cups and small pots, comprising a housing, an instantaneous water heater for the preparation of hot water in said housing, a brewing chamber comprising a stationary tube section having a vertical axis and upper and lower ends and upper and lower locking pieces with at least a portion of said tube section being located within said housing and adapted to be surrounded by hot water, feeding means for feeding coffee powder into said brewing chamber, radial drive means for moving said upper locking piece toward and away from the vertical axis of said tube section and axial drive means for moving said upper locking piece along the vertical axis of said tube section toward and away from said upper end of said tube section, said upper locking piece having inlet means for introducing hot water into said brewing chamber and comprising a support piece and a partially conically shaped centering piece mounted on said support piece and adapted for limited radial and axial movement with respect thereto and having a single gasket for sealing said brewing chamber and said inlet means, said gasket having a diameter sufficient to seal said brewing chamber at the upper end of said tube when said centering piece is centered over said upper end, and said lower locking piece being adapted to function as a piston within said tube section and having a gasket adapted to bear against the walls of said tube, means for maintaining said lower locking piece within said tube section, and vertical drive means for driving said lower locking piece for movement solely within said tube section.

5,007,334

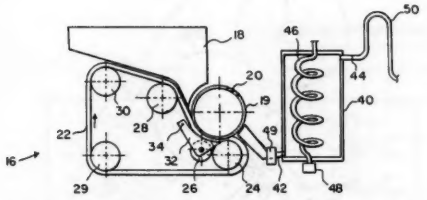
APPARATUS FOR MAKING ENZYME INACTIVATED VISCOUS FRUIT PULP AND PRODUCTS THEREFROM

Gerald W. Kobes, and Thomas A. Eisele, both of Selah, Wash., assignors to Tree Top, Inc., Selah, Wash.

Division of Ser. No. 437,290, Nov. 16, 1989, Pat. No. 4,950,493, which is a continuation of Ser. No. 935,291, Nov. 26, 1986, abandoned. This application Jun. 20, 1990, Ser. No. 541,253

Int. Cl.[5] A23L *1/212*

U.S. Cl. 99—483 8 Claims



1. An apparatus for making enzyme inactivated fruit pulp from fruit having an outer skin surrounding an inner meat, comprising:

means for simultaneously separating said meat from said skin and for converting said meat to pulp;

means for heating said pulp to a temperature sufficiently high to inactivate enzymes which tend to discolor said meat, said heating means communicating with said separating and converting means; and

means for conveying said pulp from said separating and converting means to said heating means.

5,007,335

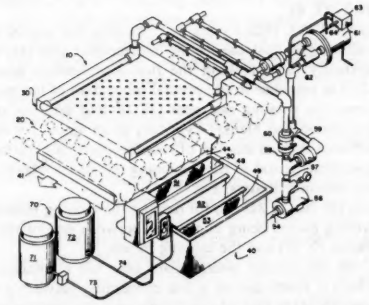
APPARATUS FOR TREATING FRESH FRUIT AND THE LIKE TO PREVENT AND RETARD THE GROWTH OFF FUNGUS

Charles R. Orman, San Bernardino; Paul E. Johnson, Riverside, and Bruce C. Adams, Pomona, all of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Division of Ser. No. 204,722, Jun. 10, 1988. This application Aug. 24, 1989, Ser. No. 398,791

Int. Cl.[5] A23B *7/00, 7/16*

U.S. Cl. 99—487 8 Claims



1. An apparatus for treating debris laden fresh fruit in a primary treating step to prevent and retard the growth of fungi comprising in combination:

(a) means for scrubbing said debris laden fruit in a fruit scrubbing station wherein said fruit is contacted by scrubbing means to remove the debris from said fruit;

(b) means for simultaneously with said scrubbing means drenching said fruit with a falling liquid in a quantity sufficient to remove substantially all debris carried by said fruit, said liquid containing a funicide;

(c) means for simultaneously maintaining the quantity and concentration of fungicide of said falling liquid in an amount to apply fungicide from said falling liquid to said fruit;

(d) means for simultaneously maintaining the conditions of said falling liquid within a range to deposit said fungicide on said fruit sufficient to prevent fungus growth on said fruit, said means for applying said fungicide being capable of applying fungicide in an amount not exceeding that which would deleteriously affect the quality of said fruit; and

(e) means for simultaneously treating said scrubbing means with said fungicide to prevent and retard the growth of fungus on said scrubbing means.

5,007,336

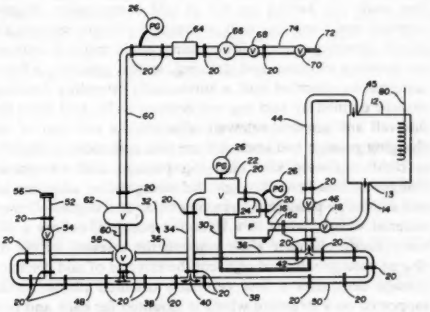
APPARATUS FOR TREATING SLAUGHTERED ANIMALS

Douglas H. Bernhardt, Minnetonka; Guillermo R. Matheu, Eden Prairie; Spencer E. Crum, Minneapolis, and John T. Adelmann, Prior Lake, all of Minn., assignors to Meat Processing Service Corporation, Minneapolis, Minn.

Filed Feb. 11, 1987, Ser. No. 13,580

Int. Cl.[5] A23B *4/00;* A23L *3/34*

U.S. Cl. 99—487 23 Claims



1. Apparatus for injection of treatment solution into slaughtered animals comprising:

a container for holding a quantity of treatment solution;

means for establishing flow of solution from the container source;

automatic valve means for receiving the flow of solution, the valve means including control means for downstream pressure control of the solution flow;

header means for receiving solution flow from the control valve;

conduit means joining the header means to container for recirculating solution thereto;

pressure sensing means positioned proximate the joining area of the header means and conduit means thereat for sensing pressure;

control line means connecting the pressure sensing means to the control means to the automatic valve whereby pressure downstream of the control valve is controlled to a steady value, and

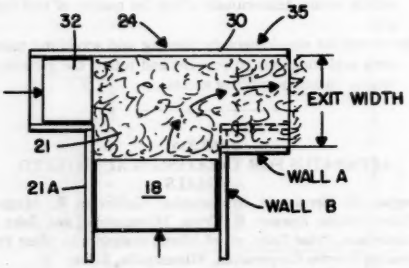
at least one dispensing conduit means connected to the header means for accepting solution therefrom at controlled pressure and being constructed and arranged for injecting the solution into the circulatory system of a slaughtered animal.

5,007,337

OVERSIZE BALE RELEASE MECHANISM FOR WASTE MATERIAL BALER

Horace R. Newsom, Midland, Tex., assignor to Mosley Machinery Co., Inc., Waco, Tex.

Filed Oct. 3, 1989, Ser. No. 416,707
Int. Cl.[5] B30B *1/00, 15/32*
U.S. Cl. 100—188 R 7 Claims



1. A waste baling machine including a compressing chamber of generally parallelopiped configuration having fixed opposite top and bottom walls and a fixed first sidewall, a horizontally extending charging passage including said fixed top and bottom walls and having an exit at said compressing chamber opposite said fixed first wall, a charging plunger reciprocable in said charging passage for pushing waste material into said compressing chamber and defining, in one position, a fourth compressing chamber wall, a horizontally extending discharge passage defined by said top and bottom walls, said fixed first sidewall and another sidewall adjacent the exit end of said charging passage and leading from said compressing chamber at right angles to said charging passage, and an ejection plunger advanceable through said compressing chamber and said discharge passage for ejecting bales of compressed waste material which, when in a retracted position, defines a fifth compressing chamber wall, wherein the sidewall of the discharge passage which is adjacent the exit end of said discharge passage comprises a first vertically oriented planar surface supported on a structure which is mounted for back and forth horizontal movement in a direction parallel to the sidewalls of said charging passage, said first vertically oriented planar surface normally being positioned substantially adjacent the exit end of said charging passage and perpendicular to the sidewalls of said discharge passage and together with said fixed first sidewall defining the normal width of the discharge passage, said structure being movable if desired to a second position at which said first vertically oriented planar surface is displaced parallel to itself from said normal position in a direction to increase by a desired amount the width of the discharge passage throughout its length to permit the ejection therethrough of an oversize compressed bale of waste material,

wherein the sidewall of said charging passage which is adjacent said first vertically oriented planar surface is shorter than the opposing sidewall of the charging passage by approximately twice the desired increase in the width of said discharge passage and is extended by substantially said desired distance by an extender plate which is much thinner than said sidewall, and

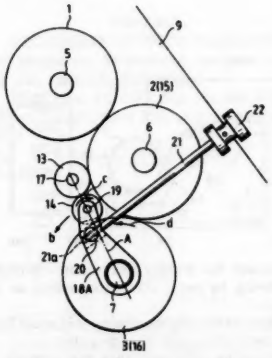
wherein said structure has a second vertically oriented planar surface disposed adjacent and perpendicular to said first vertically oriented planar surface for slidably engaging the outer surface of said extender plate as said structure is moved back and forth.

5,007,338

IMAGE POSITION ADJUSTING DEVICE IN PRINTING MACHINE

Koji Ishii, Fuchu, Japan, assignor to Ryobi Ltd., Hiroshima, Japan

Filed Jul. 11, 1989, Ser. No. 377,996
Claims priority, application Japan, Jul. 14, 1988, 63-176279
Int. Cl.[5] B41F *5/22, 13/14*
U.S. Cl. 101—142 14 Claims



1. An image position adjusting device for controlling an imaging position in a longitudinal direction of a sheet in a printing machine, the printing machine including side frames (9, 10), a plate cylinder (1), a blanket cylinder (2), an impression cylinder (3), a sheet feed cylinder (4), and gear transmission means (11, 12) for synchronously rotating the plate cylinder (1) and the blanket cylinder (2), the image position adjusting device comprising:

a first intermediate gear (13 13A) rotatably supported to the side frames (9, 10);

a second intermediate gear (14) in meshing engagement with the first intermediate gear (13 13A), the second intermediate gear (14) being drivingly engaged with a gear (15, 16) which is coaxial with and rotatable together with one of the impression cylinder (3) and the blanket cylinder (2);

a supporting shaft (17, 8) extending between the side frames (9, 10) for mounting the first intermediate gear (13 13A) such that said first intermediate gear (13 13A) is rotatable in a stationary position about an axis of said supporting shaft (17, 8);

means (18 18A 18B) for pivotally moving the second intermediate gear (14), the second intermediate gear (14) being meshedly moved along the first intermediate gear (13 13A) in response to the pivotal movement of the moving means for rotating said gear (15 16) and said one of the impression and blanket cylinders in an amount which is different than an amount of rotation occurring during the same time period of the remaining one of the blanket and impression cylinders; and

means (20 20*a* 21 21*a* 22) for driving the moving means, the driving means being connected between one of the side frames (9, 10) and the moving means;

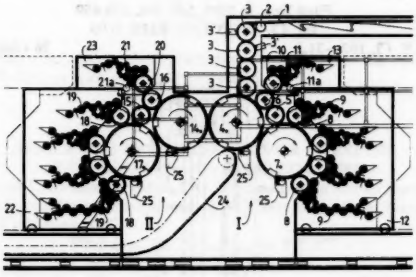
wherein the second intermediate gear has a rotation axis which is positioned on a line connecting between a rotation axis of the first intermediate gear and a rotation axis of said one of the impression cylinder and the blanket cylinder when the driving means is at a reference position, wherein none of said second intermediate gear, said first intermediate gear and said one of said impression cylinder and blanket cylinder through which said line is connected have the same rotational axis.

5,007,339

CONVERTIBLE MULTI-COLOR PRINTING MACHINE, ESPECIALLY FOR THE PRINTING OF BANKNOTES

Albrecht J. Germann, Wurzburg, Fed. Rep. of Germany, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Filed May 4, 1989, Ser. No. 347,503
Claims priority, application Switzerland, May 18, 1988, 1888/88
Int. Cl.[5] B41F *5/16, 5/22;* B41L *15/10*
U.S. Cl. 101—177 10 Claims



1. A convertible multi-color printing machine for printing paper (1), especially banknotes, comprising:

two cooperating impression cylinders (4, 14) arranged and constructed to pass said paper (1) therebetween and to apply a multi-colored image on a respective side of said paper;

a plurality of inking units (9), each inking unit having a different color;

a plurality of convertible cylinders (8), each convertible cylinders being inked by a corresponding inking unit (9);

converting means for converting said convertible cylinders (8) to one of color selecting cylinders and offset plate cylinders;

a blanket cylinder (7) having a periphery, with said convertible cylinders (8) being arranged around and in contact with said periphery;

blanket cylinder mounting means for selectively mounting said blanket cylinder into one of an offset printing position in which said blanket cylinder (7) contacts one of said impression cylinders (4), and a collect printing position in which blanket cylinder is spaced away from said impression cylinders (4, 14);

an image transfer cylinder (6) in contact with said one of said impression cylinders (4) for applying a multi-colored image thereon;

a collect plate cylinder (5) carrying a collect printing plate;

a collect plate mounting means for selectively mounting said collect plate cylinder to an operative position and an inoperative position, in said operative position said collect plate cylinder being in contact with said blanket cylinder (7) so that the collect printing plate is inked by said blanket cylinder (7) in said collect printing position, and with said image transfer cylinder for picking up said multi-colored image; and

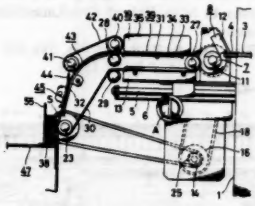
an additional single-color printing unit having an additional plate cylinder (10) with a single color image and an additional inking unit (11), said additional single-color printing unit being in contact with said image transfer cylinder (6) for transferring said single color image thereto.

5,007,340

PRINTER WITH SHEET FEEDING APPARATUS

Kazuaki Sugimoto; Tomio Nishijima, both of Numazu; Teruhisa Inoue, Tagata; Yoshihiko Sugimoto, Susono; Masashi Suzuki, Sunto, and Izumi Matsushita, Tagata, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1990, Ser. No. 469,021
Claims priority, application Japan, Jan. 24, 1989, 1-14796; Jan. 25, 1989, 1-15651; Jan. 26, 1989, 1-16676; Jan. 27, 1989, 1-18574; Jan. 27, 1989, 1-18575
Int. Cl.[5] B05C *17/06*
U.S. Cl. 101—227 9 Claims



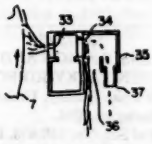
1. A printer with a sheet feeding apparatus comprising a printer case incorporating a printing mechanism for printing onto continuous forms, said printer case having a continuous forms discharging port adjacent to which a cutter is provided, said cutter being locationally followed downstream by a sheet feeding belt which rotates at a rate higher than the feed rate of said continuous forms, said belt being equipped therealong with a sheet traversing section which seizes and horizontally feeds each sheet of paper cut by said cutter from said continuous forms, a sheet direction changing section which perpendicularly changes the feed direction of said sheet, and a sheet pushing section which pushes said sheet onto a sheet stacker.

5,007,341

KEYLESS PRINTING PRESS

Takafumi Nakano; Akikazu Seo, both of Mihara; Hiromitsu Soeda, and Kazufumi Sueoka, both of Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and Ryomei Engineering Co., Ltd., Hiroshima, both of, Japan

Filed Aug. 23, 1989, Ser. No. 397,655
Claims priority, application Japan, Aug. 23, 1988, 63-109547
Int. Cl.[5] B41F *31/08*
U.S. Cl. 101—349 14 Claims



1. In a keyless printing press including an ink source roller, a closed and pressurized delivery nozzle disposed in opposition to said ink source roller and provided with a plurality of delivery ports aligned in a direction parallel to the axial direction of said ink source roller, and an ink circulation system for circulating a mixture of printing ink and water under pressure into said delivery nozzle and through said delivery ports onto said ink source roller, the improvement comprising means for, while a portion of the mixture containing an acceptable proportion of water is discharged through said delivery ports onto said ink source roller, simultaneously ensuring that a portion of the mixture including an excessive proportion of water will be discharged from said delivery nozzle without being discharged onto said ink source roller, said means comprising:

at least one outflow port provided in said delivery nozzle at a level higher than any of said delivery ports and directed in a direction other than toward said ink source roller;

whereby said circulation system will discharge a portion of

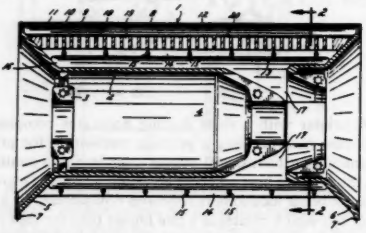
the mixture with a lesser proportion of water from a lower portion of the interior of said delivery nozzle through said delivery ports onto said ink source roller and will discharge the portion of the mixture with the excessive proportion of water from an upper portion of said interior of said delivery nozzle through said at least one outflow port away from said ink source roller.

5,007,342

AIR CUSHION DRUM OR SHEET-FED PRINTING PRESSES

Paul Abendroth, Offenbach am Main; Harry Brandes, Obertshausen, and Rudolf Raab, Hanau, all of Fed. Rep. of Germany, assignors to Man Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Aug. 9, 1989, Ser. No. 391,165
Int. Cl.[5] B41F *13/08*
U.S. Cl. 101—420 **9 Claims**



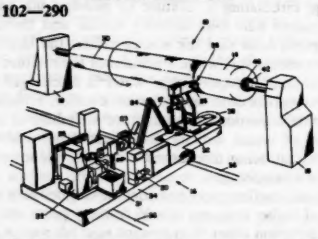
1. An air cushion drum for supporing sheets in sheet-fed printing presses, said drum comprising in combination, an inner drum body and an outer drum casing, said outer drum casing having a plurality of orifices therein, said body and said casing defining a cavity therebetween, means for supplying air streams into the drum cavity so that air issuing from said orifices in the drum casing forces the sheets away therefrom, and a sound-absorbent layer disposed in said cavity between said inner drum body and said outer drum casing opposite said orifices in said casing, said sound-absorbent layer being disposed concentrically in said cavity and spaced radially inwardly from said outer drum casing so as to define an air distribution space therebetween, and said sound-absorbent layer forming an air-permeable partition through which said air streams flow from said supply means into said air distribution space and then out through said orifices in said outer drum casing.

5,007,343

ROCKET MOTOR INSULATION AND LIKE MADE WITH THIN TACKY RIBBON

John D. Marks, Salt Lake County, Utah, assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 165,408, Feb. 26, 1988, and Ser. No. 762,743, Sep. 12, 1985, which is a division of Ser. No. 378,588, May 17, 1982, Pat. No. 4,596,619, said Ser. No. 165,408, is a continuation of Ser. No. 851,988, Apr. 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 378,588,.
This application Mar. 4, 1988, Ser. No. 164,319
Int. Cl.[5] C06D *5/06*
U.S. Cl. 102—290 **15 Claims**



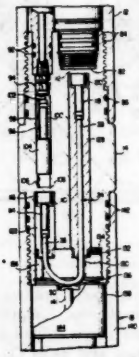
1. An elastomeric liner for sealing and insulating a rocket motor case having a dome and a center axis which extends through the apex of said dome, said liner made by a method comprising adjacently positioning and tacking together substantially circumferentially relative to said center axis integral segments of a thin tacky ribbon comprising curable elastomer in forming a continuous, variably thick, layer of said elastomer for lining around said center axis at least that portion of said rocket motor case which includes said dome, and then curing said elastomer in providing said liner.

5,007,344

DUAL FIRING SYSTEM FOR A PERFORATING GUN

Thomas D. Ricles, Kingwood, and Richard M. Ward, Laporte, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 1, 1988, Ser. No. 278,659
Int. Cl.[5] F42B *3/00*; E21B *7/00*
U.S. Cl. 102—31.2 **26 Claims**



1. A dual firing system for use with detonation perforating apparatus in a well completion operation, comprising:

an elongate detonator having two ends each fireable by a different source;

a first firing apparatus adapted for activating said detonator in response to a first input thereto;

a second firing apparatus adapted for activating said detonator for firing said perforating apparatus in the event said first firing apparatus fails such that a dual firing of said perforating apparatus is permitted;

a housing for containing said first and second firing apparatus and said detonator as a unit attachable with resect to one end of the perforating apparatus; and

a chamber in said housing for containing said elongate detonator in fluid isolation from said first and second firing apparatus, said chamber having two bulkhead membrane sidewall areas each adjacent a respective said detonator end, said bulkhead membranes being adapted for penetration for setting off said detonator.

5,007,345

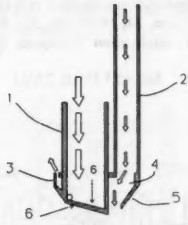
METHOD AND APPARATUS FOR CHARGING WATERLOGGED BOREHOLES WITH EXPLOSIVES

Phil O'Garr, R.R. #3, Frankford, Ontario, Canada K0K 2C0

Filed Aug. 30, 1989, Ser. No. 400,695
Int. Cl.[5] F42B *3/00*
U.S. Cl. 102—313 **12 Claims**

1. A method of charging waterlogged boreholes with water resistant particulate explosive material, comprising inserting a pneumatic line with upwardly directed nozzles at the lower end thereof and a material supply line into a borehole, blowing compressed air through said pneumatic line such that at least a portion thereof is directed through said nozzles to form a substantially water-free air pocket around the lower end of the

supply line, supplying particulate explosive material through the supply line to a charging zone in the vicinity of the lower



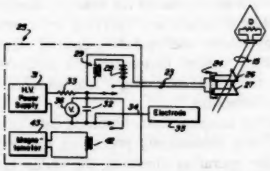
end thereof, and gradually withdrawing said line as the borehole fills up with explosive material.

5,007,346

DEVICE FOR DETECTING AND/OR SWEEPING ELECTRICALLY CONTROLLED MINES

James L. Kirkland, Panama City, Fla., assignor to United States of America as Represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 11, 1967, Ser. No. 675,277
Int. Cl.[5] B63G *9/00*; F42B *22/42*
U.S. Cl. 102—402 **10 Claims**



1. Means for detecting an insulated electrical conductor located within a subaqueous medium, comprising:

means submerged within said subaqueous medium for penetrating the insulation of and making electrical contact with said electrical conductor upon impact therewith;

a source of high potential electrical energy;

an electrode means connected to said source of high potential energy disposed within the aforesaid subaqueous medium in such manner as to make electrical connection therewith;

means connected to said insulated electrical conductor contacting means and to said electrode means for timely and effectively connecting said high potential electrical source to the electrical conductor of said insulated electrical conductor in response to the impact of said electrical conductor contacting means thereon; and

means connected across said high potential electrical energy source and responsive to variations in said high potential electrical energy source for indicating the connection of said high potential electrical source to the aforesaid insulated electrical conductor.

5,007,347

MODULAR MISSILE UPGRADE APPARATUS

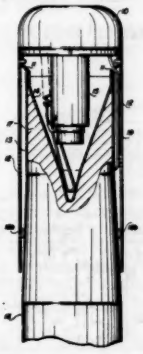
Sidney R. Greene, Tucson, Ariz., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 19, 1989, Ser. No. 382,154
Int. Cl.[5] F42B *10/00, 12/02*
U.S. Cl. 102—473 **6 Claims**

1. A kit for the conversion of a missile to provide an improved warhead module (13), said kit comprising:

(a) an adapter (11) having a first neck and a second neck, said first neck being attachable to said warhead module;

(b) a probe module (10) attachable to the second neck of said adapter; and,



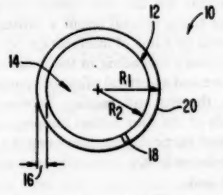
(c) a faring (12) attachable to the second neck, said faring extending past said warhead module.

5,007,348

SPHERICAL PROJECTILE FOR ELECTROMAGNETIC ACCELERATION

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 792,116, Oct. 28, 1985, abandoned.
This application Sep. 8, 1987, Ser. No. 96,294
Int. Cl.[5] F42B *15/00*
U.S. Cl. 102—501 **10 Claims**



1. A projectile for electromagnetic acceleration comprising:

a generally spherical shell having an exterior surface and defining an enclosed void, lightweight foam material filling said void, the ratio of the area of said exterior surface to the mass of said shell being substantially greater than that of a corresponding solid body, said shell having an orifice therein for eliminating any pressure differential between said void and the outside of said shell; and

means on a substantial portion of said exterior surface for holding an electric charge which is sufficient to accelerate said shell in response to an electric field in a manner similar to the reaction of an ion to an electric field.

5,007,349

MOBILE TRACK LEVELING, LINING AND TAMPING MACHINE

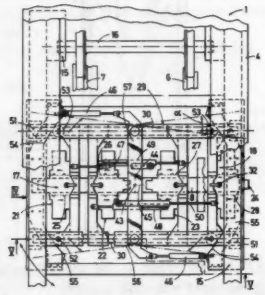
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jan. 24, 1990, Ser. No. 469,174

Claims priority, application European Pat. Off., Mar. 10, 1989, 89890069.1

Int. Cl.[5] E01B 27/11

U.S. Cl. 104—12 15 Claims



1. A mobile track leveling, lining and tamping machine, a track comprising two rails fastened to ties supported on ballast and each rail having a gage side and a field side, which comprises the combination of

(a) a machine frame mounted for mobility along the track in an operating direction and carrying drive, brake, operating energy source and operating control means,

(b) two widely spaced undercarriages supporting the machine on the track, including a rear undercarriage in the operating direction,

(c) four ballast tamping units mounted between the undercarriages and immediately preceding the rear undercarriage in the operating direction, the ballast tamping units being mounted for independent transverse and vertical adjustment with respect to the machine frame, a respective one of the ballast tamping units being arranged at the gage side and the field side of each rail, and each ballast tamping unit comprising

(1) a pair of vibratory tamping tools reciprocable in the direction of the track and immersible in the ballast with a respective one of the ties positioned between the tamping tools,

(d) a carrier frame for the four ballast tamping units, the carrier frame being pivotal about a substantially vertical axis constituted by a line of intersection between a vertical plane of symmetry extending in the longitudinal direction of the machine and a vertical plane of symmetry extending transversely thereto and passing between the pairs of tamping tools of the four ballast tamping units,

(e) transverse and vertical guide means on the pivotal carrier frame for independently vertically and transversely adjusting each unit,

(f) power drive means linking each unit to the pivotal carrier frame for independently vertically and transversely adjusting each unit,

(g) a power drive for pivoting the carrier frame about the vertical axis whereby the pairs of tamping tools may be centered with respect to obliquely positioned ties,

(h) a track leveling and lining unit mounted on the machine between the two undercarriages and immediately preceding the ballast tamping units in the operating direction, and

(i) a leveling and lining reference system controlling the track leveling and lining unit operation.

5,007,350

UNIVERSAL MOBILE TRACK LEVELING, LINING AND TAMPING MACHINE

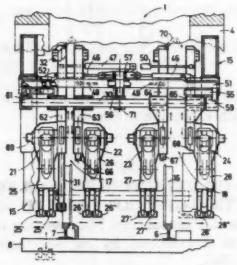
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jan. 24, 1990, Ser. No. 469,355

Claims priority, application European Pat. Off., Mar. 10, 1989, 89890068.3

Int. Cl.[5] E01B 27/11

U.S. Cl. 104—12 4 Claims



1. A universal mobile track leveling, lining and tamping machine useful for work in track switches and tangent track, the track comprising two rails fastened to ties supported on ballast and each rail having a gage side and a field side, which comprises the combination of

(a) a machine frame mounted for mobility along the track in an operating direction and carrying drive, brake, operating energy source and operating control means,

(b) two widely spaced undercarriages supporting the machine on the track, including a rear undercarriage in the operating direciton,

(c) four ballast tamping units mounted between the undercarriages and immediately preceding the rear undercarriage in the operating direction, the ballast tamping units being mounted for independent transverse and vertical adjustment with respect to the machine frame, a respective one of the ballast tamping units being arranged at the gage side and the field side of each rail, and each ballast tamping unit comprising

(1) a frame and

(2) a pair of vibratory tamping tools mounted on the frame and reciprocable in the direction of the track and immersible in the ballast with a respective one of the ties positioned between the tamping tools,

(d) an independent vertical guide means for independently vertically adjusting each ballast tamping unit,

(e) at least one transverse guide means for independently transversely adjusting the ballast tamping units, the ballast tamping unit frames being transversely displaceably mounted on the transverse guide means,

(f) a mechanical coupling for releasably connecting the frames of the tamping units at the gage and field sides of each rail for common transverse displacement thereof,

(g) independent power drive means connected to each ballast tamping unit for independently vertically and transversely adjusting each unit along a respective one of the vertical guide means and the transverse guide means,

(h) a track leveling and lining unit mounted on the machine between the two undercarriages and immediately preceding the ballast tamping units in the operating direction, the track leveling and lining unit comprising

(1) power-driven, transversely and vertically adjustable lifting hooks and flanged lining rollers, and

(i) a leveling and lining reference system controlling the track leveling and lining unit operation.

5,007,351

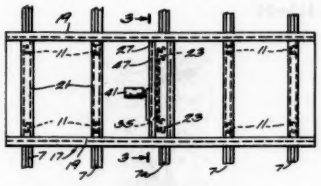
MOBILE CARRIAGE WITH CENTER DRIVE

James C. Muth, Eagle, Wis., assignor to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Feb. 3, 1989, Ser. No. 306,540

Int. Cl.[5] B61C *9/00;* **B60L** *13/02;* **A47F** *3/08;* **A47B** *53/00*

U.S. Cl. 105—101 **1 Claim**



1. A center drive mobile carriage system comprising:

a. a pair of spaced and parallel end rails fixed to a support surface;

b. at least one intermediate rail fixed to the support surface and located parallel to and between the pair of end rails, the intermediate rail being formed with a longitudinal groove therein;

c. at least one carriage supported on the end and intermediate rails for moving therealong, the carriage comprising:

i. an elongated frame that spans the end rails;

ii. first wheel means for supporting the carriage on the end rails;

iii. a pair of second wheels mounted to the carriage for supporting the carriage on the intermediate rail, each second wheel having a flange that engages the groove in the intermediate rail and a sprocket; and

iv. a chain trained around the two second wheels; and

d. drive means for moving the carriage along the rails, the drive means comprising:

i. a source of power mounted to the carriage frame and having an output shaft;

ii. a power sprocket connected to the power source output shaft and meshing with the carriage chain; and

iii. adjustment means for changing the location of the power source output shaft and power sprocket on the carriage frame to thereby adjust the tension of the carriage chain.

5,007,352

PALLET CONSTRUCTION

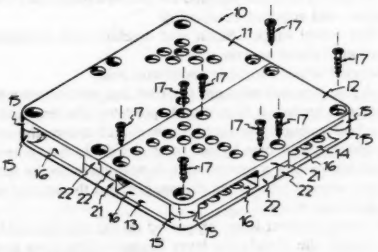
Guido M. Calkoen, Glen Waverley, Australia, assignor to Design Count Pty. Ltd., Australia

Filed Jun. 22, 1988, Ser. No. 209,582

Claims priority, application Australia, Jun. 22, 1987, PI02603

Int. Cl.[5] B65D *19/12*

U.S. Cl. 108—56.1 **9 Claims**



1. A pallet comprising:

a plurality of generally identical pallet forming members arranged in two connected layers and forming a pallet bottom and a pallet top,

each said pallet forming member having a width and a length substantially twice the width, and

each said layer being constructed of said pallet forming members arranged side by side with the pallet forming members in one said layer being arranged at ninety degrees relative to the pallet forming members in the other said layer such that the four pallet sides are of substantially equal lengths.

5,007,353

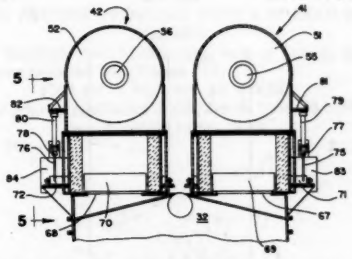
INCINERATOR IMPROVEMENTS

John N. Basic, Sr., 41 W. 202 Whitney Rd., St. Charles, Ill. 60174

Continuation-in-part of Ser. No. 659,849, Oct. 9, 1984, Pat. No. 4,706,578, which is a continuation of Ser. No. 362,853, Mar. 29, 1982, Pat. No. 4,475,469, which is a continuation-in-part of Ser. No. 248,054, Mar. 27, 1981, Pat. No. 4,438,705. This application Jun. 1, 1987, Ser. No. 60,761

Int. Cl.[5] F23B *5/00;* **F23C** *9/00;* **F23G** *5/06*

U.S. Cl. 110—212 **279 Claims**



1. In an incinerator system for bulk refuse and hydrocarbon-containing liquids having:

(1) a main combustion chamber with:

(a) a first inlet opening for the introduction of solid bulk refuse; and

(b) a first outlet opening for the egress of the gaseous products of combustion from said main chamber; and

(2) a reburn unit with:

(a) a second inlet opening, coupled to and in fluid communication with said first outlet opening;

(b) a second outlet opening for the egress of the gaseous products of combustion from said reburn unit;

(c) burner means, coupled to said reburn unit, for burning a fuel in said reburn unit; and

(d) oxygenating means, coupled to said reburn unit, for introducing an oxygen-containing gas into said reburn unit,

the improvement wherein:

(A) said reburn unit includes first and second separate reburn sections;

(B) said first outlet opening has first and second outlet ports each for permitting the egress of the gaseous products of combustion from said main combustion chamber;

(C) said second inlet opening has first and second inlet ports, coupled to and in fluid communication with, respectively, said first and second outlet ports, said first and second inlet ports opening into said first and second reburn sections, respectively;

(D) said second outlet opening includes third and fourth outlet ports from said first and second reburn sections, respectively;

(E) said burner means includes first and second burner sections, coupled to said first and second reburn sections, respectively, for burning a fuel in said first and second reburn sections, respectively, and

(F) said oxygenating means includes first and second oxy-

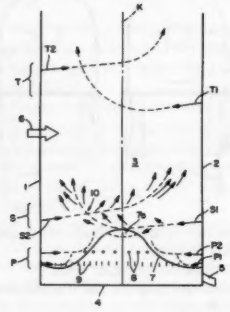
genating sections, coupled to said first and second reburn sections, respectively, for introducing an oxygen-containing gas into said first and second reburn sections, respectively.

5,007,354

COMBUSTION AIR SUPPLY SYSTEM FOR A RECOVERY FURNACE

Erik Uppstu, Siivikkala, Finland, assignor to Oy Tampella Ab, Tampere, Finland

Filed Feb. 16, 1990, Ser. No. 480,926
Claims priority, application Finland, Feb. 20, 1989, 890803
Int. Cl.[5] F23G *7/04*
U.S. Cl. 110—238 **11 Claims**



1. A combustion air supply system for a recovery furnace which includes a combustion chamber defined by a front and a rear wall, side walls and a floor serving as heat transfer surfaces, means mounted above the floor for delivering into the combustion chamber a waste liquor, particularly black lye, obtained from an industrial process and serving as fuel, and an outlet means communicating with combustion chamber floor and intended for discharging melt substance from a carbonization layer building up on the floor as a result of incineration, said combustion air supply system comprising:

combustion air inlet ports disposed in at least one wall of the combustion chamber, said combustion air inlet ports including secondary air inlet ports which are located in the vertical direction of the combustion chamber between a waste liquor supply point and the carbonization layer formed on the floor of the combustion chamber during the processing, said secondary air inlet ports being divided into two arrays in such a manner that:

(a) the combustion air coming in through inlet ports of a first array is directed such that at least a portion of the air contact the outer surface of the carbonization layer, and the remaining portion of the air bypasses substantially along the central region of the carbonization layer;

(b) the combustion air coming in through inlet ports of a second array is adapted to bypass substantially above the combustion air coming through inlet ports of the first array; and

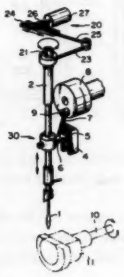
(c) said inlet ports making up said first and second arrays are located on the opposite walls of the combustion chamber.

5,007,355

LEATHER OR SIMILAR WORK SEWING MACHINE HAVING FLAT-NEEDLE CONTROLLER AND SEWING METHOD BY USE OF THE SEWING MACHINE

Gennai Yanagisawa, Matsumoto, Japan, assignor to Kabushiki Kaisha Iida, Kawaguchi, Japan

Filed Aug. 2, 1989, Ser. No. 389,057
Claims priority, application Japan, Aug. 10, 1988, 63-198072
Int. Cl.[5] D05B *15/08, 19/00*
U.S. Cl. 112—54 **3 Claims**



1. A sewing machine for leather comprising a needle bar holding a flat needle and supported for movement up and down, and up/down movement mechanism for up/down moving said needle bar, and a control means for controlling the movement of said flat needle, said flat-needle control means including:

a circumferential position control means comprising a needle-bar rotating means and a control motor connected to said needle-bar rotating means for controlling a circumferential position of said flat needle, said needle-bar rotating means being provided on said needle bar at a portion thereof so as to rotate integrally with said needle bar while allowing said needle bar to move up and down; and

a needle bar holding means attached to a portion of said needle bar where said up/down movement mechanism is connected to said needle bar so that said needle-bar holding means is connected to said up/down movement mechanism and said needle-bar holding means moves up/down integrally with said needle bar while allowing said needle bar to rotate.

5,007,356

CUTTER ACTUATOR OF A BUTTON PERFORATING SEWING MACHINE

Katsuo Hiratsuka; Yoshiyuki Odaka, and Takeshi Yoshida, all of Tochigi, Japan, assignors to SSMC Inc., Edison, N.J.

Filed Jul. 3, 1989, Ser. No. 374,808
Claims priority, application Japan, Jul. 26, 1988, 63-97940[U]
Int. Cl.[5] D05B *3/00*
U.S. Cl. 112—68 **4 Claims**

1. A cutting actuator adapted for use on a button perforating machine, said actuator comprising:

a first wheel supported on said machine and continuously rotated about an axis;

a second wheel rotatable about said axis;

a clutch disposed adjacent the first and second wheels, the clutch having a first clutch position wherein said first wheel engages the second wheel and causes the second wheel to be driven by and rotated with the first wheel, the clutch having a second clutch position wherein the first and second wheels are disengaged and the second wheel does not rotate;

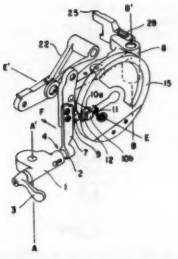
a cutting actuator lever supported on the machine and coupled to the clutch, the lever having a first lever position wherein the clutch is placed in the first clutch position and the second wheel is rotated, the lever having a second

lever position wherein the clutch is placed in the second clutch position and the second wheel does not rotate;

solenoid means coupled to the lever, said solenoid means when actuated placing the lever in the first lever position and when deactuated placing the lever in the second lever position;

a first elongated cutting arm having a knife at one end;

a second elongated cutting arm having a block at one end; and



cam means coupled to the first and second arms, said cam means coupled to the second wheel and responsive to rotation of the second wheel to move the knife and block into button hole forming position with respect to any sewn material disposed between the knife and block, said cam means when the second wheel does not rotate moving the knife and block out of button hole forming position.

5,007,357

EMBROIDERING DEVICE FOR A SEWING MACHINE

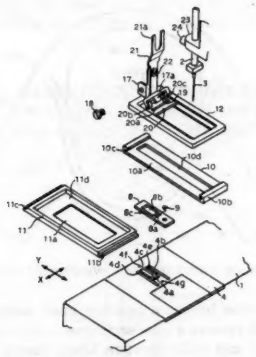
Hideaki Takenoya, and Yoshikazu Ebata, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1989, Ser. No. 371,417

Claims priority, application Japan, Jun. 24, 1988, 63/154612; Sep. 30, 1988, 63/244584

Int. Cl.[5] D05B *21/00*; D05C *7/04, 9/04*

U.S. Cl. 112—103 **3 Claims**



1. An embroidering device for a sewing machine including a frame, stitch forming means comprising a vertically reciprocating and laterally swinging needle bar and a needle attached to a lower end of the needle bar, a needle plate attached to the sewing machine frame, a presser bar having a presser foot attached to a lower end thereof for pressing a fabric to be sewn against the needle bar, and a feed dog movable in synchronism with a vertical movement of the needle bar to transport, in cooperation with the presser foot, a fabric to be sewn in a direction transverse to lateral swinging and vertical reciprocating directions of the needle bar, said embroidering device comprising:

first guide means associated with the needle plate of the sewing machine;

first drive means to be supported on the needle plate of the sewing machine and comprising a first elongate member engaging said first guide means and to be connected with the feed dog for displacement thereby relative to said first guide means in the direction in which the fabric to be sewn is transported;

second drive means comprising a second elongate member having an intermediate part to be pivotally supported on the presser bar, an upper end to be operatively connected to the needle bar, and a lower end;

second guide means supported at said lower end of said second elongate member; and

fabric expanding means connected with said first elongate plate for movement therewith relative to said second guide means and for movement relative to said first elongate plate in the lateral swinging direction of the needle bar.

5,007,358

CLOTH PRESSER PROVIDED WITH A THREAD END HOLDER

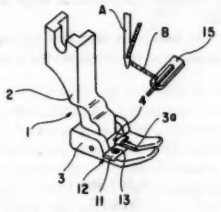
Kiyoshi Kawakubo, and Shuichi Sato, both of Tochigi, Japan, assignors to SSMC Inc., Edison, N.J.

Filed Jul. 3, 1989, Ser. No. 374,892

Claims priority, application Japan, Jul. 26, 1988, 63-97941[U]

Int. Cl.[5] D05B *29/06, 27/04*

U.S. Cl. 112—235 **2 Claims**



1. In combination:

a cloth presser;

a thread end holder positioned beside the cloth presser and adapted to hold an end of an extension thread;

a presser supporter;

said cloth presser foot pivotally mounted on the presser supporter, said foot having a base with a pair of projections projecting laterally from the base;

a needle location groove disposed between the pair of lateral projections and extending in a direction of projection;

a thread end guide groove disposed in the base and communicating with the needle location groove;

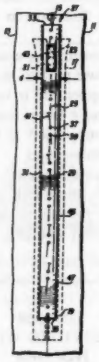
a needle thread restriction plate mounted on the cloth presser foot for preventing a needle thread from sliding into the thread end guide groove;

a stationary knife secured to rear surface of one of the lateral projections of the cloth presser foot and having a cutting blade disposed at the right angles to and intersecting the thread end guide groove;

the needle thread restriction plate covering an upper surface of the thread end guide groove at an inclined angle $\theta 1$ defined between an inclined portion of the needle thread restriction plate and a sewn material, said angle $\theta 1$ is larger

than an inclination angle $\theta 2$ defined between the extension thread and the sewn material.

5,007,359
ZIPPER STITCHING GUIDE
Mildred P. Sanders, 3 Dogwood Hill Dr., Jackson, Miss. 39211
Filed May 24, 1990, Ser. No. 527,801
Int. Cl.[5] D05B *35/06, 3/12*
U.S. Cl. 112—265.2 **13 Claims**



1. A stitching guide for attachment of a zipper to a base material comprising

a flexible strip of elongated material having at least one sustantially straight longitudinal edge;

a plurality of in-line perforations in said strip extending along a longitudinal line substantially parallel to said one substantially straight longitudinal edge adapted for pin insertion; and

at least one slot in said strip, said slot having a geometrical configuration adapted to circumscribe a slide on a zipper.

5,007,360
MAST
Joseph Abraham, 235 A Darby St., Newcastle, NSW, Australia 2300 ; Michael Hamonet, 3 Warhurst Street, Toronto, NSW; Phillip Gracie, Rofe Street, Coal Point, NSW, both of Australia 2283 , and Warwick J. Hood, 10 Ford Street, Balmain, NSW, Australia 2041
Continuation of Ser. No. 165,195, filed as PCT AU87/00088 on Apr. 2, 1987, published as WO87/05962 on Oct. 8, 1987, abandoned. This application Nov. 22, 1989, Ser. No. 441,201
Claims priority, application Australia, Apr. 2, 1986, 05295
Int. Cl.[5] B63B *15/00*
U.S. Cl. 114—90 **17 Claims**

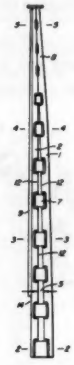
1. A boat mast comprising:

a fore elongated shell member having a top, a bottom and a length therebetween, and edges and defining a curved cross section with an open trailing side;

an aft elongated shell member having a top, a bottom and a length therebetween, and edges and defining a cross section including at least one flat wall and an open side, the open side of the aft member being disposed generally opposite and facing the open trailing side of the fore member, the edges of the fore and aft members being disposed generally opposite each other and spaced apart;

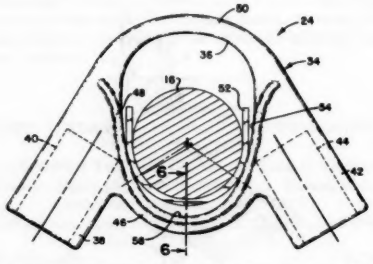
spacers, disposed at intervals along the length of the mast, joining opposing edges of the aft and fore members while preserving the space separating the opposing edges, the space defined between opposing edges providing access to an interior of the mast; and

a fitting for providing an anchorage point for rigging, the fitting being positioned along a neutral axis defined by the



interior of the mast so that loads transmitted by the rigging are applied adjacent the neutral axis of the mast.

5,007,361
BOOM-MAST COUPLER FOR WINDSURFER
Thomas M. Swanstrom, 179 Bergquist Rd., Duluth, Minn. 55608
Filed Apr. 6, 1989, Ser. No. 334,460
Int. Cl.[5] B63H *9/10*
U.S. Cl. 114—98 **18 Claims**



1. A boom-mast connector for a windsurfer or the like comprising:

a collar portion having a concave inner surface which is adapted to receive a windsurfer mast, said concave inner surface of said collar portion being shaped so as to be adapted to contact a windsurfer mast at separate first and second contact areas, in a wedge-type fashion, without the need for additional structure on said collar portion for urging the mast into said concave inner surface;

a first projection having a first socket defined therein which is adapted to receive a first boom of a windsurfer;

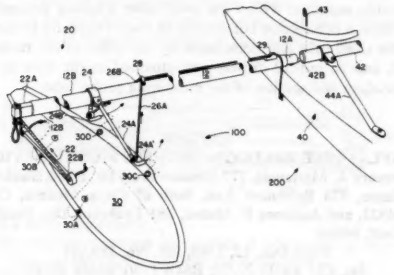
a second projection having a second socket defined therein which is adapted to receive a second boom of a windsurfer; wherein said collar portion, said first projection and said second projection are of unitary construction.

5,007,362

PORTABLE OUTRIGGER ASSEMBLY

Mark A. Balogh, Star Rte., P.O. Box 79, Cedar Island, N.C. 28520

Filed Feb. 9, 1990, Ser. No. 477,636
Int. Cl.[5] B63B *43/14*
U.S. Cl. 114—123 22 Claims



1. A portable outrigger assembly for a boat such as a kayak, sailboat and canoe comprising:

a. an inflatable hull;

b. support means for supporting said inflatable hull in spaced-apart relationship to said boat and comprising an elongate support arm having a first and second end, said support arm being adapted to be removably connected to said boat at the first end; and

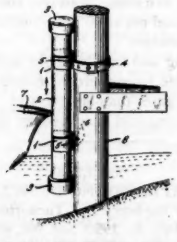
c. hull attachment means secured to the second end of said support arm and connected to said inflatable hull for securing said inflatable hull to said support arm, said hull attachment means including means to selectively change the cross-sectional shape of said inflatable hull to modify the lift capability thereof comprising first hull engagement means at the terminal portion of the second end of said support arm for engaging one side of said hull and second hull engagement means spaced-apart from said first hull engagement means toward the first end of said support arm for engaging the opposing side of said hull, said second hull engagement means being further adapted to be urged toward the first end of said support arm and thereby to increase the width and decrease the height of said hull as desired to modify the lift capability thereof.

5,007,363

GUNNEL SAVER DOCK AND MOORING FENDER

Roy James, R.D. 1-Box 92, Smyrna, Del. 19977

Filed Jul. 26, 1989, Ser. No. 386,216
Int. Cl.[5] E02B *3/22*
U.S. Cl. 114—219 4 Claims



1. A docking and mooring fender apparatus comprising an elongated buoyant cylindrical fender element which has an enlarged stop element at each of its' ends,

at least one generally cylindrical guide element having attachment means for attachment to a mooring facility,

said fender element being slidably retained within said at least one guide element so as to be able to rise and fall with tide or waves,

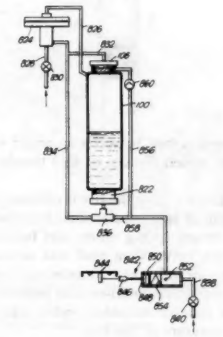
said enlarged stop elements being adapted to contact said at least one guide element to thereby limit said fender elements extend of travel within said at least one guide element.

5,007,364

GAS CONTROL VALVES AND APPARATUS FOR CONTROLLING BUOYANCY IN WATER

Brian L. Buckle, Colwyn Bay, United Kingdom, assignor to Buoyco (M.M.) Limited, Clwyd, England

Filed Jul. 26, 1989, Ser. No. 385,021
Claims priority, application United Kingdom, Jul. 26, 1988, 8817737
Int. Cl.[5] B63G *8/22*
U.S. Cl. 114—331 4 Claims



1. Apparatus for producing hovering in water comprising a buoyancy chamber, first valve means for controlling a supply of gas to said buoyancy chamber, second valve means for controlling venting of gas from said chamber, said second valve means comprising a pneumatically actuable venting valve and a gas control valve for sensing the occurrence of a condition in which the gas pressure in said chamber exceeds ambient water pressure by a predetermined amount and for communicating gas from a supply of gas to said pneumatically actuable venting valve to open the venting valve to vent gas from said chamber whilst said condition persists, and means for sensing descent of the apparatus and for actuating said first valve means to release gas into said buoyancy chamber.

5,007,365

AIR-LEAK INDICATOR FOR VEHICLE TIRE

Feng-Lin Hwang, No. 21, Pa Te Rd., Chi Tu District, Keelung City, Taiwan

Filed Jan. 17, 1990, Ser. No. 466,192
Int. Cl.[5] B60C *23/04;* G01L *19/12*
U.S. Cl. 116—34 R 1 Claim

1. An air-leak indicator for use in cooperation with a tire air valve of a tire comprising;

a tubular body having a transparent mid-section;

fastening means at a lower end of said tubular body for engaging, a tire valve stem;

a horizontal annular partition with holes there through, fixed in said tubular body above said fastening means;

a tire valve actuator projection mounted at the center of said annular partition and projection downward, coaxially with said fastening means;

a tubular indicator piston having bands of different fluorescent colors around an outer periphery of said tubular

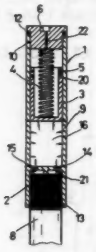
indicator piston, each color band representing a predetermined pressure range;

said tubular indicator piston having a closed bottom and being slidably contained within said tubular body above the annular partition;

said tubular indicator piston having seal means along the outer periphery thereof to provide airtight cooperation between said tubular indicator piston and an inner periphery of said tubular body;

an end cap threaded to an upper end of said tubular body;

said end cap having a hole communicating with an interior of said tubular body;



a return spring mounted between an under side of said end cap and said closed bottom of said tubular indicator piston;

wherein, air pressure from the tire is released to act upon the closed bottom of said tubular indicator piston against the bias of the return spring when said fastening means engages the tire valve stem and said actuator projection opens the tire air valve and actuates said tubular indicator piston, said transparent mid-section permitting a viewer to observe the tubular indicator piston and determine the relative air pressure of the tire.

5,007,366

REFRACTORY GAS PERMEABLE BUBBLING PLUG

Rudolf Handler, Neunkirchen, Austria, assignor to Veitscher Magnesitwerke-Actien-Gesellschaft, Vienna, Austria

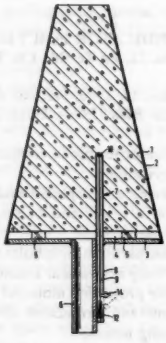
PCT No. PCT/AT89/00035, § 371 Date Nov. 28, 1989, § 102(e) Date Nov. 28, 1989, PCT Pub. No. WO89/09836, PCT Pub. Date Oct. 19, 1989

PCT Filed Apr. 13, 1989, Ser. No. 457,766

Claims priority, application Austria, Apr. 13, 1988, 958/88

Int. Cl.[5] C21B *7/24;* G01D *5/26;* C21C *5/48*

U.S. Cl. 116—208 **7 Claims**



1. A refractory, gas-permeable bubbling plug for a vessel containing a molten metal radiating heat, the plug having a cold end remote from the molten metal and a hot end facing the molten metal, the hot plug end being subject to wear by the heat radiated from the molten metal to leave a remaining plug size after wear, and the plug comprising at least one measuring probe displaying the remaining plug size, the measuring probe comprising a small tube having a tip extending into the plug and spaced a predetermined distance from the cold plug end, and an end section protruding from the cold plug end, a wire movably mounted within the small tube, a spring preloading the wire, a connection connecting an end of the wire to the tip of the small tube and detachable by the effect of the radiated heat, and an optical display unit attached to the wire in the protruding end section of the measuring probe tube.

5,007,367

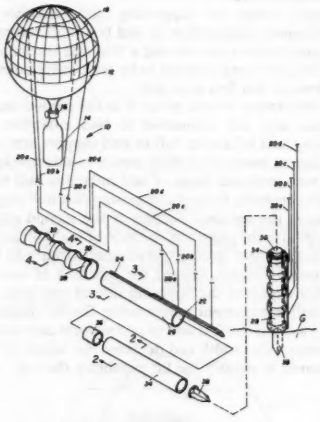
INFLATABLE BALLOON DISTRESS SIGNAL DEVICE

Lawrence A. Matteucci, 777 Meadowsweet Dr. #108; Shirley J. Rager, 223 Baltimore Ave., both of Corte Madera, Calif. 94925, and Ambrose P. Maher, 381 Lynbrook Dr., Pacifica, Calif. 94044

Filed Dec. 12, 1988, Ser. No. 283,167

Int. Cl.[5] A63H *27/10;* B64B *1/50;* B65H *49/18*

U.S. Cl. 116—210 **3 Claims**



1. A distress signal device comprising:

a generally spherical balloon;

a net containing said balloon;

said net having a bottom opening smaller in diameter than the maximum horizontal diameter of said ballon;

a base member;

four guide lines extending between and converging continuosly from said net at 90° intervals around said balloon to said base member;

a spindle carrying said base member having four spools to wind said guide lines thereon; means for inflating said balloon with lighter-than-air gas; and

means for anchoring said base member to the ground.

5,007,368

EMERGENCY SKI ALTERING DEVICE AND METHOD

Timothy P. Bush, 9 Bayberry Dr., Tuckerton, N.J. 08087

Filed Feb. 26, 1990, Ser. No. 484,256

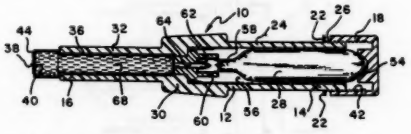
Int. Cl.[5] G08B *1/00*

U.S. Cl. 116—211 **31 Claims**

1. A device to alert other skiers of a downed skier that is incapacitated in the snow out of direct sight from the other skiers, the device comprising:

(A) a cartridge comprising:

(i) an interior storage volume sufficient to store a charge of liquid,
(ii) aperture means to provide an opening to the interior storage volume for continuously dispensing said charge of liquid from the cartridge as the cartridge is projected through the air, and
(iii) a closure means to
(a) prevent inadvertant opening of the aperture means prior to actuating the trigger means, and
(b) be openable to permit dispensing of said charge of liquid from the opening of the cartridge, and



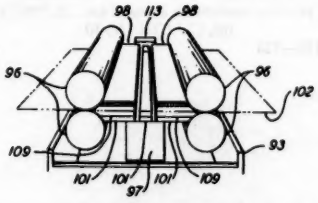
(B) a body comprising:
(i) projection means to provide a source of power to project the cartridge from the body, and
(ii) trigger means on the body to actuate the projection means, and
(C) said charge of liquid in the cartridge having physical characteristics to disperse from the aperture means into droplets as the cartridge is projected through the air and to have high visibility when sprinkled on the snow.

5,007,369

APPARATUS FOR SOLDER COATING PRINTED CIRCUIT PANELS

Gilbert V. Morris, Amherst, N.H., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 199,604, May 31, 1988, Pat. No. 4,903,631. This application Sep. 1, 1989, Ser. No. 402,224
Int. Cl.[5] H05K *3/22*
U.S. Cl. 118—56 **7 Claims**



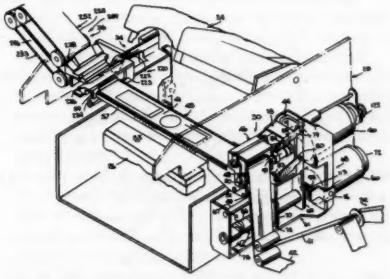
1. In apparatus for soldering printed circuit panels comprising a plurality of stations through which the printed circuit panels are conveyed in line, through a horizontal path, the stations including a preheat station having heating means and means for conveying the panels through the preheat station to elevate the temperature of the panels, a flux station for coating the panels with a flux and including means for conveying the panels through the flux station, a soldering station including at least one solder immersion chamber through which said printed circuit panels may be horizontally conveyed for coating the panels with molten solder, the improvement wherein the solder station comprises a solder manifold below the travel path of the panels through the soldering station, and means for pumping molten solder into the manifold whereby to form a standing wave of molten solder, the crest of which extends above the travel path of the panels, said standing wave of molten solder having sufficient volume flow so as to flood at least in part the top side of the panels as they are conveyed through the standing solder wave, said soldering station also comprising a solder immersion chamber defined by upper and lower retainer guide means and two pairs of rolls, the rolls functioning to convey printed circuit panels horizontally through the chamber, each roll pair including an upper roll and a lower roll, the guide means being parallel to the rolls and the lower guide means positioned close to the lower rolls to minimize solder leakage, an opening in the lower guide means parallel to the rolls, the manifold parallel to and below the solder chamber communicating with the opening in the lower guide means, the manifold including side plates terminating below the travel path of said panels for draining excess solder from said manifold.

5,007,370

MAILING MACHINE TAPE MODULE AND TAPE TAKE-UP AND MOISTENING SYSTEM THEREOF

Hugh St. L. Dannatt, 119 Milwaukee Ave., Bethel, Conn. 06801

Filed Dec. 28, 1988, Ser. No. 291,468
Int. Cl.[5] B05C *1/04*
U.S. Cl. 118—246 **2 Claims**



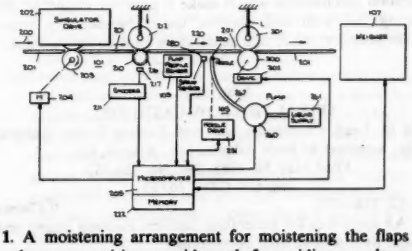
1. A device for moistening tape comprising:
a reservoir;
a roller rotatable in said reservoir;
a conveyer mounted to engage said roller to rotate it in said reservoir and to receive said tape between said conveyer and said roller and advance said tape with rotation of said roller.

5,007,371

CONTROL SYSTEM FOR MOISTENER

Kevin J. O'Dea, Sandy Hook; Norman J. Bergman, Danbury; Peter C. Digiulio, Bridgeport; Donald T. Dolan, Ridgefield, and James L. Vanderpool, Easton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 28, 1988, Ser. No. 291,088
Int. Cl.[5] B05B *3/18, 13/04*
U.S. Cl. 118—680 **3 Claims**



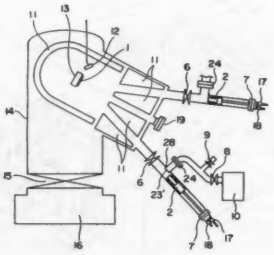
1. A moistening arrangement for moistening the flaps of envelopes comprising a guide path for guiding envelopes, a moistener, means for moving said moistener transversely of said guide path, first means for moving envelopes at a first speed onto said guide path, means for detecting said first speed, second means for moving envelopes away from said guide path at a second speed, means for detecting said second speed, said

first and second means being spaced apart a distance less than the lengths of said envelopes, means for sensing the widths of the flaps of envelopes at a determined position between said first and second means, and means for controlling the position of said moistener as a function of the speed of said first means for an initial portion of the envelope, and as a function of the speed of the second means for a final portion of the envelope.

5,007,372
VACUUM DEPOSITING APPARATUS

Shintarou Hattori; Takayuki Takahagi, and Akira Ishitani, all of Shiga, Japan, assignors to Research Development Corporation, Tokyo, Japan

Filed Dec. 5, 1988, Ser. No. 280,152
Claims priority, application Japan, Dec. 4, 1987, 62-308426; Dec. 4, 1987, 62-308427; Dec. 4, 1987, 62-308428
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—715 **10 Claims**



1. A vacuum depositing apparatus, comprising a vacuum vessel containing a substrate used for the purpose of applying a vapor-deposited film thereupon by means of vapor deposition; a sputtering cell charged with a material to be vapor-deposited; a collimator containing long channels to impart directivity to the evaporated material to be vapor deposited from the spouting cell to the substrate, thereby serving a rectifying function between said spouting cell and said substrate, said collimator being installed between said substrate and said spouting cell along a straight line connecting the center of said substrate with the center of said spouting cell for the purpose of preventing impurities from contaminating the vapor-deposited film, wherein said collimator is maintained at a temperature lower than that of said spouting cell or that of said substrate.

3. A vacuum depositing apparatus, comprising a vacuum vessel containing a substrate used for the purpose of applying a vapor-deposited film thereupon by means of vapor-deposition; one or more spouting cells charged with a material to be vapor-deposited, each spouting cell including one or more separation mechanisms which make it possible to charge the spouting cell with said material under substantially atmospheric pressure, while said substrate is kept under vacuum.

5,007,373
SPIRAL HOLLOW CATHODE

Keith O. Legg, Dunwoody, Ga., and Yonhua Tzeng, Auburn, Ala., assignors to Ionic Atlanta, Inc., Atlanta, Ga.

Filed May 24, 1989, Ser. No. 356,433
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 **9 Claims**

9. An apparatus for generating uniform electron beams and plasmas over a large area comprising:

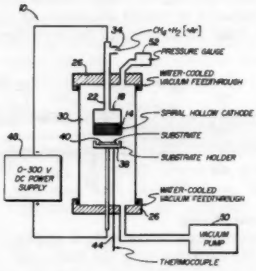
a. a cathode having a spiral shape in which spaces approximately 0.5 mm wide exist between adjacent layers and composed of a metal approximately 0.08 mm thick, 10 mm wide, and 150 mm long selected from the group consisting of tungsten, tantalum, and molybdenum;

b. a cylinder for receiving the cathode;

c. a gas mixture for flowing through the layers of the cathode;

d. an anode toward which the electrons in the electron beams are emitted;

e. a thermocouple imbedded in the anode for measuring its temperature;



f. a substrate positioned on the anode for receiving the emitted electrons;

g. a vessel for containing the cylinder, anode, and gas mixture;

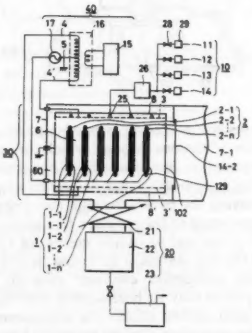
h. means for eliminating unwanted air from the vessel; and

i. a pressure gauge for measuring the pressure inside the vessel.

5,007,374
APPARATUS FOR FORMING THIN FILMS IN QUANTITY

Shunpei Yamazaki, Tokyo; Shinji Imatou; Mitsunori Tsuchiya, both of Atsugi; Kenji Itoh, Zama; Takashi Inushima, and Atsushi Kawano, both of Atsugi, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Filed Mar. 17, 1989, Ser. No. 324,668
Claims priority, application Japan, Mar. 22, 1988, 63-67572
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 **6 Claims**



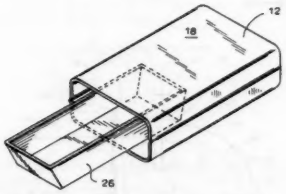
1. A plasma processing apparatus comprising a vacuum chamber, a gas introduction system for feeding a reactive gas into said vacuum chamber, a pair of electrodes provided in said vacuum chamber for generating plasma gas therebetween, a plurality of substrate holders arranged in subtantially parallel with the electric field induced between said electrodes in order not to provoke disturbance of the electric field, a first power source for applying first electric energy between said pair of electrodes and a second power source for applying second electric energy to said substrate holders.

5,007,375

LITTER BOX ENVELOPES

Francis P. Paciullo, Middlesex, N.J., assignor to Colgate-Palmolive Co., Piscataway, N.J.

Filed Apr. 16, 1990, Ser. No. 509,118
Int. Cl.[5] A01K *45/00*
U.S. Cl. 119—170 2 Claims



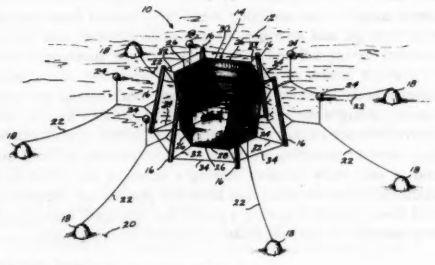
1. A litter box envelope for use in combination with a litter box received therein, comprising a top sheet and a bottom sheet bonded to each other along their side edges and an end edge of each thereof, a scratch proof, tear resistant facing sheet bonded to said top sheet, said facing sheet bonded to said top sheet, said facing sheet being formed of non-woven nylon fibers, which are spun bonded and heat treated, said bottom sheet being underneath said litter box, said top sheet being above said litter box.

5,007,376

SPAR BOUY PEN SYSTEM

Gary F. Loverich, and Barry A. Griffin, both of Bainbridge Island, Wash., assignors to Nor'Eastern Trawl Systems, Inc., Bainbridge Island, Wash.

Filed Apr. 18, 1989, Ser. No. 339,676
Int. Cl.[5] A01K *61/00*
U.S. Cl. 119—3 8 Claims



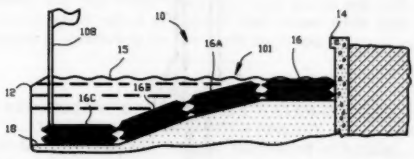
1. A spar buoy pen comprising:
a flexible water-permeable wall;
at least two buoyancy members having an elongated shape and weighted to float substantially vertically attached to said flexible wall at spaced-apart locations whereby at least one of the elongated buoyancy members is connected to said flexible wall by a first upper attachment line and a second lower attachment line, said first upper attachment line being shorter than said second lower attachment line so that said at least one buoyancy member is displaced from the vertical position at a pre-determined angle; and
separate anchor means attached to each said buoyancy member, each said anchor means urging the buoyancy member attached thereto away from said flexible wall so that said flexible wall is suspended between the buoyancy members.

5,007,377

APPARATUS AND METHOD FOR MARINE HABITAT DEVELOPMENT

August A. Muench, Jr., 3031 SW. Manatee Ave., Ruskin, Fla. 33570

Filed Feb. 6, 1990, Ser. No. 475,912
Int. Cl.[5] A01K *61/00*
U.S. Cl. 119—4 17 Claims



1. An improved apparatus for the development of a marine habitat through the growth of mollusks, comprising:
a plurality of generally cylindrical retaining members;
each of said plurality of retaining members having a mesh wall extending between a first and a second end;
said mesh wall of each of said plurality of generally cylindrical retaining members being selected for inhibiting the movement of adult mollusks therethrough and for simultaneously enabling the movement of smaller marine life therethrough;
a plurality of fastening means for interconnecting said plurality of generally cylindrical retaining members with a mesh wall of each said plurality of retaining members directly engaging with a mesh wall of an adjacent one of said plurality of retaining members;
each of said plurality of fastening means comprising a deformable element extending through adjacent mesh walls of adjacent retaining members for securing said adjacent retaining members into an array; and
means for closing said first and second ends of each of said plurality of retaining members for retaining adult mollusks therein when said plurality of retaining members is immersed within water and for facilitating the movement of smaller marine life therethrough thereby developing a marine habitat concurrently with the growth of the mollusks.

5,007,378

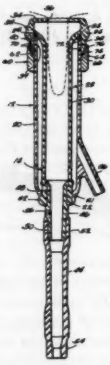
MILKING MACHINE TEAT CUP ASSEMBLY

Reed A. Larson, Watertown, Wis., assignor to Hi-Life Rubber Inc., Johnson Creek, Wis.

Filed Mar. 17, 1989, Ser. No. 325,218
Int. Cl.[5] A01J *5/04*
U.S. Cl. 119—14.47 18 Claims

1. A milking machine teat cup assembly comprising:
a shell including a tubular body having an outer wall and an upper end portion terminating in a rim;
a flexible liner including a suction portion which fits inside said shell and has an outer wall, and a head portion having an opening for receiving a cow's teat and a peripheral cuff which surrounds the upper end portion of said shell and is spaced outwardly from the outer wall of said suction section to define an annular recess which receives the upper end portion of said shell and sealingly engages said rim, said cuff including an outer surface having a lower portion;
an annular sleeve surrounding said body of said shell and slidably mounted on said shell for relative axial movement between an unlocked position wherein said sleeve is axially displaced from said cuff and a locked position wherein at least a portion of said sleeve overlies at least the lower portion of said cuff to clamp said cuff into

sealing engagement with the upper end portion of said shell and to protect said cuff against impacts; and



detent means on said sleeve and said cuff for releasably holding said sleeve in the locked position against movement in an axial direction relative to said cuff.

5,007,379

AIR CIRCULATING SYSTEM FOR POULTRY HOUSING

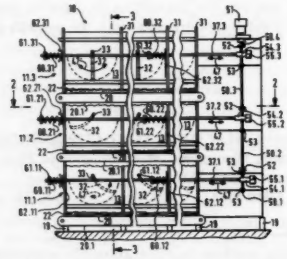
Karl H. Lackner, Ittlingen, Fed. Rep. of Germany, assignor to Firma Salmet Gesellschaft mit Beschrankter Haftung & Co., Kommanditgesellschaft, Ittlingen, Fed. Rep. of Germany

Filed Mar. 15, 1990, Ser. No. 493,747

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1989, 3908336

Int. Cl.[5] A01K *31/00*

U.S. Cl. 119—17 **14 Claims**



1. Drive mechanism for an air circulating system of a battery of poultry cages having a poultry dropping receptacle extending beneath the battery of cages, the air circulating system drying collected poultry droppings by air currents sweeping over the poultry dropping receptacle, and with the air circulating system including a plurality of air ventilator flaps longitudinally spaced from each other and supported on transverse axle means, the drive mechanism includes means for pivotably displacing the respective air ventilator flaps including traction means extending in a longitudinal direction of the battery of poultry cages and engaging the respective air ventilator flaps at a small distance from the transverse axle means, means for driving said traction means in a reciprocating fashion, and at least one spring means arranged at each of said traction means for normally biasing the respective traction means in a direction opposite to a driving direction provided by the means for driving.

5,007,380

FOWL FEEDER

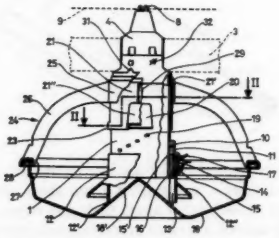
Antonio R. Badia, and José F. Tarazaga, both of Vilafranca del Penedes, Spain, assignors to Tecnica e Innovationes Ganaderas, S. A., Vilafranca del Penedees, Spain

Filed Dec. 27, 1989, Ser. No. 457,979

Claims priority, application Spain, Jan. 13, 1989, 8900123

Int. Cl.[5] A01K *39/01*

U.S. Cl. 119—53 **5 Claims**



1. A fowl feeder comprising a central tubular body member having a first end adapted to be attached to a suspension member so that said body member will hang vertically therefrom, said body member having a second, open end; a plate member including a projection portion; means supporting said plate member on said central tubular body member with said projecting portion extending adjacent said second open end of said body member to control dispensing of feed through said second open end; said plate member including a rim; said means supporting said plate member comprising a first ring member attached to said rim, a second ring member surrounding the exterior of a portion of said central tubular member and a plurality of arms extending between and connecting said first and second ring members with said supporting means being rotatable relative to said central tubular member; a sleeve member rotatably mounted about a portion of said body member; said sleeve member and said body member each having lateral apertures disposed so that said apertures may be moved into and out of alignment by relative rotation between said sleeve member and said body member to control dispensing of feed through said apertures to said plate member; said sleeve member having a flared portion adjacent said aperture thereof to prevent access of the fowl to said aperture; said central tubular body member having resilient tooth means and said sleeve having a slit cooperating with said tooth means; said sleeve member having a circumferential shoulder; said second ring member including a double shoulder portion and said one end of said body member having a shoulder on which said circumferential shoulder and shoulder portion are supported; said sleeve member having a protrusion engaging said second ring member to prevent relative rotation therebetween.

5,007,381

METHOD TO DECREASE BLACK SMOKE OF DIESEL

Toshiaki Kakegawa, Tsukuba, and Shoichi Furuhama, Tokyo, both of Japan, assignors to Advance Combustion Engineering Institute Co., Ltd., Tsukuba, Japan

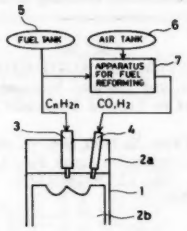
Filed Jan. 22, 1990, Ser. No. 468,328

Int. Cl.[5] F02B *75/12*

U.S. Cl. 123—1 A **4 Claims**

1. A method for decreasing black smoke of an operating diesel engine, characterized in that a fuel injection nozzle to inject the fuel into a combustion chamber in a cylinder of the diesel engine and an auxiliary injection nozzle to inject com-

bustible gas or non-combustible gas into the combustion chamber of the cylinder are provided, and that said combustible gas



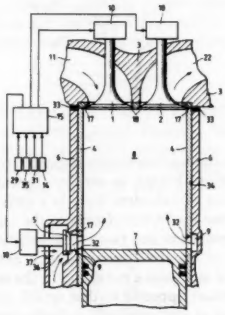
or non-combustible gas is injected into the cylinder in the latter stage of combustion.

5,007,382

CYCLE CHANGEABLE ENGINE

Hideo Kawamura, Samukawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Apr. 25, 1990, Ser. No. 514,445
Claims priority, application Japan, May 9, 1989, 1-114142
Int. Cl.[5] F02B *69/06;* **F01L** *9/04*
U.S. Cl. 123—21 **8 Claims**



1. A cycle changeable engine capable of changing over its operating cycle to either one of two-cycle or four-cycle operation, comprising:

a cylinder block;

cylinder liners, each being fitted into each of cylinders formed in said cylinder block;

a cylinder head disposed fixedly in said cylinder block;

first intake ports and exhaust ports, each being formed in said cylinder head;

first intake valves for a four-cycle operation, each being disposed in each said first intake port;

exhaust valves, each being disposed in each said exhaust port;

intake openings formed at lower peripheral portion of said cylinder liners;

second intake ports formed at the lower port of said cylinder block and communicating with said intake openings;

second intake valves for a two-cycle operation being disposed in each said second intake port;

electromagnetic valve driving devices for opening and closing said first intake valves, said exhaust valves and said second intake valves, respectively, by electromagnetic force;

detection means for detecting the operational conditions of said engine, said detection means including a rotation sensor for detection of the number of revolutions of said engine; and

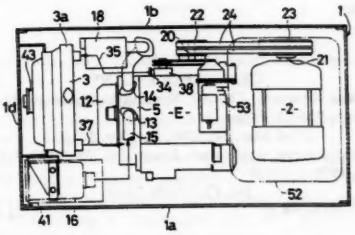
a controller for opening and closing either one of the groups of said first intake valves and said second intake valves and keeping the other group under the closed state in response to the detection signal by said detection means; wherein in response to the detection signal from said rotation sensor representing that the engine speed is a low speed, said first intake valves are kept closed and said second intake valves are opened and closed while said engine is operated in the two-cycle operation.

5,007,383

WATER-COOLING SYSTEM FOR A WATER-COOLED HORIZONTAL CYLINDER ENGINE

Ryoichi Ito; Koji Iwai, and Tsuyoshi Nishida, all of Sakaishi, Japan, assignors to Kubota Limited, Japan

Division of Ser. No. 139,753, Dec. 30, 1987, Pat. No. 4,883,024.
This application Aug. 21, 1989, Ser. No. 396,503
Claims priority, application Japan, Jan. 23, 1987, 62-15001
Int. Cl.[5] F01P *1/02*
U.S. Cl. 123—41.49 **6 Claims**



1. A water-cooling system for a water-cooled horizontal cylinder engine, comprising:

a cylinder head provided in front of a cylinder block of the water-cooled horizontal cylinder engine;

a forwardly facing radiator, located substantially in front of and with its rear facing the cylinder head;

a radiator fan disposed to face the radiator;

a water jacket formed in the cylinder block and the cylinder head, an outlet port of the water jacket being connected to an inlet port of the radiator through a hot water pipe therebetween, and a water outlet port of the radiator being connected to an inlet port of the water jacket through a cool water pipe therebetween; and

an air cleaner and a muffler provided to be located forwardly of the engine, one to the left and the other to the right thereof and opposing each other when seen from the cylinder head, the air cleaner and muffler each being disposed so as to not extend above a maximum height of said radiator, and the muffler being positioned to one side of the cylinder head and substantially between the cylinder head and the radiator.

5,007,384

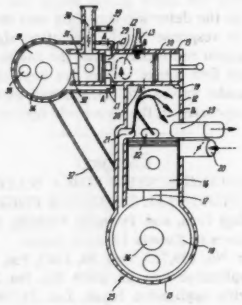
L-HEAD TWO STROKE ENGINES

Gordon P. Blair, Newtownabbey, Northern Ireland, assignor to The Queen's University of Belfast, Belfast, Northern Ireland

Filed Feb. 22, 1990, Ser. No. 484,072
Claims priority, application United Kingdom, Feb. 22, 1989, 8904043
Int. Cl.[5] F02B *75/04*
U.S. Cl. 123—48 A **7 Claims**

1. An L-head two stroke engine comprising a first cylinder and a second cylinder, the two cylinders being connected to one another in perpendicular relation, a first piston mounted for reciprocable movement in the first cylinder and a second piston mounted for reciprocable movement in the second

cylinder, a first crank and a second crank, a drive means drivably connecting the first and second cranks, means for supplying fuel to one of the cylinders, ignition means for igniting fuel



in said one cylinder and means providing a communication between the two cylinders whereby in operation the compression ratio in said one cylinder is less than that in the other cylinder.

5,007,385

CRANKLESS ENGINE

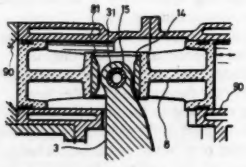
Hiromasa Kitaguchi, Chi-101, Simamachi, Komatsu-shi, Isikawa-ken, 923-03, Japan

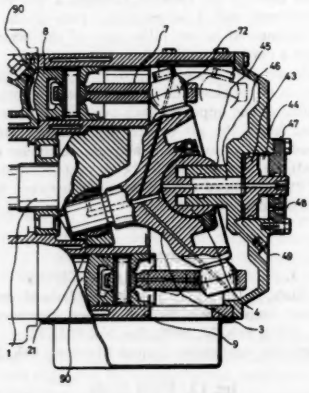
Filed Mar. 30, 1990, Ser. No. 501,712

Claims priority, application Japan, Jul. 15, 1989, 1-183410; Feb. 6, 1990, 2-26958

Int. Cl.[5] F02B *75/04*

U.S. Cl. 123—48 B **21 Claims**





1. A crankless engine comprising a piston which reciprocates in a cylinder and a rocking member capable of changing a rocking fulcrum, said rocking member comprising a pin portion and an outer-periphery connection both formed integrally with each other, said piston and said outer-periphery connection being interconnected through a joint, and a front end of said pin portion being pivotally connected inclinedly through a rotatably-supported rotary shaft, in which the reciprocating motion of said piston and the rotating motion of said rotary shaft are transformed from one to the other.

5,007,386

INTAKE SYSTEM FOR AUTOMOTIVE ENGINE

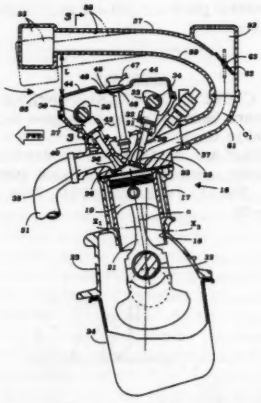
Takehiro Washizu, and Tsutomu Nagamatsu, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 22, 1990, Ser. No. 483,103

Claims priority, application Japan, Feb. 22, 1989, 1-40380

Int. Cl.[5] F02M *35/10*

U.S. Cl. 123—52 MC **16 Claims**



1. An internal combustion engine disposed transversely in an engine compartment having an air flow opening at one end thereof, a plurality of cylinders lying in a cylinder bank, each having at least one intake port facing in the same direction in said engine compartment and away from said air flow opening, and a plurality of manifold runners, each extending from a respective one of said intake ports and in the direction in said engine compartment opposite to that which said intake ports face to be at least in part over said cylinder bank toward said air flow opening, said cylinder bank being inclined from a vertical plane in said engine compartment in said opposite direction to increase the spacing between said cylinder bank and said manifold runners for air flow around said runners.

5,007,387

FOUR VALVE PER CYLINDER ENGINE HEAD

Masachika Arao, 21400 Lassen St., Unit G, Chatsworth, Calif. 91311

Filed Jan. 29, 1990, Ser. No. 471,366

Int. Cl.[5] F01L *1/18*; F02P *15/02*

U.S. Cl. 123—90.022 **4 Claims**

3. An improved head assembly for an internal combustion gasoline engine having an integral camshaft and push rod system comprising:

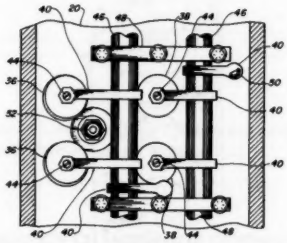
a head having a pair of exhaust valve ports with seats and a pair of intake valve ports with seats for each cylinder, also a plurality of push rod passages in linear alignment with the engine camshaft, and a threaded spark plug hole centrally located between the ports, the general area around the ports with the threaded hole recessed with the areas underneath and between the engine forming a combustion chamber,

a pair of exhaust valves disposed longitudinally parallel and having angularity from minus 2 to plus 2 degrees relative to said engine cylinder centerline in said engine and con-

tiguous with the appropriate port for relieving the combustion gases on an exhaust stroke,

a pair of inlet valves disposed angularly with respect to each cylinder in said engine contiguous with the appropriate port for introducing a combustible mixture of fuel and air into the engine on a suction stroke,

a plurality of rocker arms and valve springs, the arms contacting said valves and the springs surrounding the valve stem for lifting the valves and returning them into contact



with the valve seats under the influence of the springs at the appropriate timing,

a pair of rocker arm shafts unitedly retaining the rocker arms in rotatable linear containment allowing each set of valves to react in sequence for operation of the engine, and

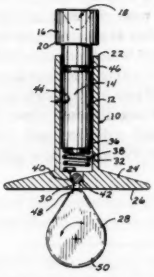
a plurality of push rods drivingly communicating between the engine camshaft and said rocker arms such that each pair of valves are lifted from the head in a sequence producing a cyclic action allowing the engine to operate.

5,007,388

HYDRAULIC VALVE LIFTER

Richard W. Seilenbinder, Hales Corners, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Apr. 23, 1990, Ser. No. 512,767
Int. Cl.[5] F01L *1/14, 1/24*
U.S. Cl. 123—90.55 **10 Claims**



1. A hydraulic lifter for an internal combustion engine having a crankcase containing a hydraulic fluid, comprising:

an axially movable cylinder having an axial bore therein and having a lifter face that engages a cam on a camshaft;

a piston having a valve end and a base end, said piston being axially slidable within the axial bore, and the valve end of said piston engaging a valve member interconnected with an engine valve;

a chamber located within said axial bore and adjacent the base end of said piston;

an outer spring, disposed within said chamber that engages said piston base end; and

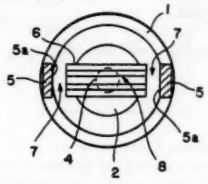
valve means in fluid communication with both said chamber and with said crankcase for transferring hydraulic fluid from said crankcase to said chamber in response to a pressure decrease within said chamber.

5,007,389

IGNITION PLUG FOR INTERNAL COMBUSTION ENGINES AND A PROCESS FOR IGNITING GAS MIXTURE BY THE USE THEREOF

Ryohei Kashiwara, Raitsu Ootori 106, 456-1, Ootori-kitamachi 8-cho, Sakai-shi, Osaka-fu; Hideaki Kashiwara, 3-B, 611, 151-30, Ninomaru-cho, Mukojima, Fushimi-ku, Kyoto-shi; Hidehiko Noguchi, 7-14, Taiho 3-chome, Kanan-cho, Minamikawachi-gun, Osaka-fu, and Takeaki Kashiwara, 3,37-411, Nagayoshidedo 3-chome, Hirano-ku, Osaka-shi, all of Japan

Filed Nov. 9, 1988, Ser. No. 268,788
Claims priority, application Japan, Dec. 17, 1987, 62-321045; Sep. 30, 1988, 63-248394
Int. Cl.[5] F02P *1/00;* **H01T** *13/20*
U.S. Cl. 123—169 MG **19 Claims**



1. An ignition plug for an internal combustion engine comprising;

(a) an insulating body;

(b) a high tension center electrode positioned axially within the body and having an axial end;

(c) an ignition member fixed to the axial end of said center electrode, said ignition member having at least one end facing radially outward from the center electrode and a groove having a longitudinal axis, said groove facing axially away from the center electrode;

(d) at least one ground electrode radially spaced from the end of the ignition member on the center electrode and positioned along the longitudinal axis of said groove to define a spark gap between the ground electrode and the end of the ignition device;

whereby a gas mixture can be ignited by a spark between the end of the ignition member and the ground electrode and whereby expanding combustion gases impinge against the ground electrode and are diverted along the longitudinal axis of the groove.

5,007,390

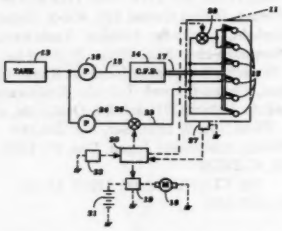
STARTING FUEL SUPPLYING DEVICE FOR INTERNAL COMBUSTION ENGINE

Seiichi Tanaka, and Tamotsu Suzuki, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 303,942, Jan. 30, 1989, abandoned. This application Aug. 6, 1990, Ser. No. 563,816
Claims priority, application Japan, Feb. 12, 1988, 63-30184
Int. Cl.[5] F02M *1/10*
U.S. Cl. 123—180 T **7 Claims**

1. In an internal combustion engine having a plurality of combustion chambers and a main charge forming system for supplying a fuel air mixture to all combustion chambers of said engine, the improvement comprising means independent of said main charge forming system for supplying supplemental

fuel to said engine, and temperature responsive means for controlling the amount of supplemental fuel supplied to said



engine by controlling the number of combustion chambers to which fuel is supplied.

5,007,391

ENGINE START FACILITATING VALVE

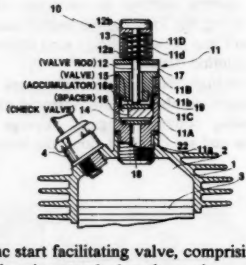
Shigeki Nomoto, Tokyo, Japan, assignor to Komatsu Zenoah Company, Tokyo, Japan

Filed Sep. 29, 1989, Ser. No. 414,900

Claims priority, application Japan, Sep. 30, 1988, 63-127392[U]; Jul. 31, 1989, 1-90209[U]

Int. Cl.[5] F02N *17/00*

U.S. Cl. 123—182 **10 Claims**



1. An engine start facilitating valve, comprising:

(a) a valve housing attached to the engine;

(b) spacer member disposed within said valve housing and formed with at least one accumulator space for accumulating engine explosion pressure;

(c) a check valve member disposed within said valve housing, for opening/closing communication between an engine combustion chamber and the accumulator space;

(d) a valve member disposed within said valve housing, for opening/closing communication between the accumulator space and atmospheric pressure;

(e) a valve rod for elastically urging said valve member to open condition by a valve spring, at engine compression stroke cylinder pressure being released to atmospheric pressure through said opened check valve member and said opened valve member, at engine explosion stroke and after, cylinder pressure being accumulated in the accumulator space to close said valve member against the valve spring, at engine halt accumulated pressure being released through both said check valve member and said valve member.

5,007,392

CYLINDER HEAD STRUCTURE FOR MULTIPLE CYLINDER ENGINES

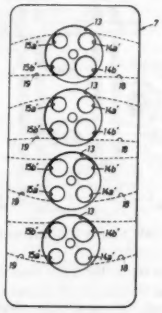
Tomonori Niizato; Katsumi Noguchi, and Kiyoshi Tsukimura, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1989, Ser. No. 388,259

Claims priority, application Japan, Aug. 1, 1988, 63-192377

Int. Cl.[5] F02B *15/00*

U.S. Cl. 123—193 H **8 Claims**



1. A cylinder head structure for a multiple cylinder engine, comprising, at least for each of its cylinders located at either longitudinal end of its cylinder bank:

a combustion chamber (**13**) defined by the cylinder (**1**) and a piston (**2**) received therein;

an intake passage (**18**) communicated with an intake manifold (**20**) at its one end and with said combustion chamber at its other end; and

an exhaust passage (**19**) communicated with an exhaust manifold (**21**) at its one end and with said combustion chamber at its other end;

at least one of said intake passage and said exhaust passage being curved toward a longitudinally central part of said cylinder bank as it extends from its other end to its one end, said curved passage being communicated with said combustion chamber at its other end by at least two ports (**14***a*, **14***b*, **15***a*, **15***b*) which are controlled by valves (**12***a*, **12***b*) and arranged along a longitudinal direction of said cylinder bank, and one of said ports involving a relatively larger flow rate being disposed closer to a longitudinally central part of said cylinder bank than the other port involving a relatively smaller flow rate.

5,007,393

INTEGRAL LIFTING HOOK FOR AN OUTBOARD ENGINE

George L. Broughton, Zion, Ill.; Paul W. Breckenfeld, Kenosha, Wis.; David W. Mate, McHenry; James A. Nettles, Round Lake, both of Ill., and Duane E. Rogers, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

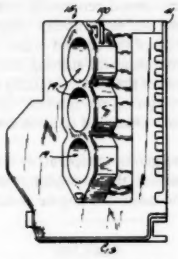
Filed May 17, 1990, Ser. No. 525,251

Int. Cl.[5] F02F *7/00*

U.S. Cl. 123—195 R **12 Claims**

1. An outboard motor comprising a lower unit, a propeller shaft rotatably supported by said lower unit and adapted to support a propeller, and an internal combustion engine sup-

ported by said lower unit and drivingly connected to said propeller shaft, said internal combustion engine including an



engine block defining at least one cylinder and having a lifting hook integrally formed on said engine block.

5,007,394

COMBUSTION CHAMBER FOR COMPRESSION IGNITION INTERNAL COMBUSTION ENGINE

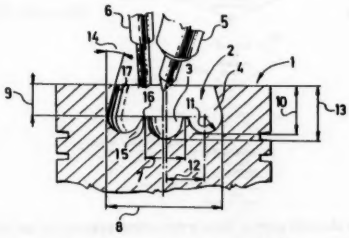
Jaroslav Brychta; Eduard Lutisan, and Vladimir Jirkovsky, all of Prague, Czechoslovakia, assignors to AVIA koncern, Prague, Czechoslovakia

Filed May 10, 1990, Ser. No. 521,600

Claims priority, application Czechoslovakia, May 12, 1989, 2858-89

Int. Cl.[5] F02F *3/00*

U.S. Cl. 123—279 **4 Claims**



1. A combustion chamber for a compression ignition internal combustion engine with multiport jet direct fuel injection, said chamber comprising

a hollow cavity formed in a piston head wherein said cavity is defined by a rotary side wall surface and a shaped bottom;

said shaped bottom of the combustion chamber in the piston head having a peripheral rotary surface and an internal rotary surface;

said peripheral rotary surface being separated from said internal rotary surface by a barrier of circular plan;

said barrier having a top, said piston head having a planar surface, said rotary surfaces each having diameters, distances from said planar surfaces being referred to as depths, the following ratios being adhered to:

the ratio between the depth of the top of the barrier and the maximum depth of the peripheral rotary surface being in the range from 0.4 to 0.7;

the ratio between the maximum diameter of the internal rotary surface and the maximum diameter of the peripheral rotary surface being in the range from 0.25 to 0.45; and

the ratio between the maximum depth of the internal rotary surface and the maximum depth of the peripheral rotary surface being in the range 0.85 to 1.15.

5,007,395

THROTTLE VALVE FOR AN INTERNAL COMBUSTION ENGINE

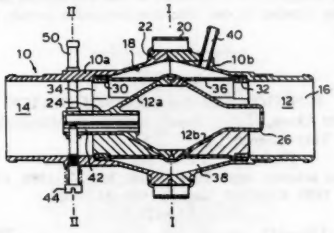
Robert Wakeling, Feering, England, assignor to Ford Motor Company, Dearborn, Mich.

PCT Filed Jul. 7, 1988, Ser. No. 340,721, filed as PCT/GB88/536 on Mar. 9, 1989, published as WO89/00639 on Jan. 26, 1989

Claims priority, application United Kingdom, Jul. 10, 1987, 8716352

Int. Cl.[5] F02D *9/18;* **F02M** *9/10;* **F16K** *31/126*

U.S. Cl. 123—337 **2 Claims**



1. A throttle valve for an internal combustion engine in which a flow path is defined between a central core (**12**) including a by-pass passage (**42**) to supply air when the engine is idling, and a tube (**36**) having a resiliently flexible wall, which tube (**36**) separates the flow path from an adjacent working fluid chamber (**38**), whereby changes in the pressure within the chamber (**38**) cause deformation of the tube wall resulting in changes in the tube cross-section between a wide open throttle position and a valve closed position, the flexible walled tube (**36**) being designed to take up a valve closed position when the pressures on its opposite sides are equal, characterised in that the flexible walled tube (**36**) is uniformly cylindrical in its relaxed state.

5,007,396

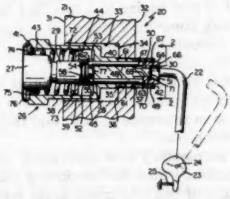
THROTTLE VALVE ADJUSTMENT CONSTRUCTION, THROTTLE VALVE ADJUSTMENT UNIT THEREFOR AND METHODS OF MAKING THE SAME

Carl A. Wellenkotter, Rochester, Mich., and David E. Counts, Louisville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 13, 1989, Ser. No. 434,231

Int. Cl.[5] F02M *3/05*

U.S. Cl. 123—339 **12 Claims**



1. In a throttle valve adjustment construction comprising a support means, a throttle valve adjustment arm movably carried by said support means and having moving means for tending to move said arm in one direction to a closed throttle condition thereof, and a temperature operated throttle valve adjustment means carried by said support means and being operatively associated with said arm to adjust the position of said arm at said throttle closed condition thereof, said throttle valve adjustment means comprising a temperature responsive device that comprises a piston member and a cylinder member that are adapted to provide relative movement therebetween when said device senses certain temperatures, said throttle valve adjustment means having a movable stop member opera-

tively associated with said temperature responsive device to be positioned thereby in various positions thereof in relation to the temperature being sensed by said device, said adjustment arm being adapted to be moved by said moving means into abutting relation with said stop member in said various positions thereof when said arm is in said throttle closed condition thereof, said throttle valve adjustment means comprising a housing means carrying said temperature responsive device and said movable stop member, said support means carrying said housing means, the improvement wherein said housing means has a stop surface against which said arm is adapted to abut when said arm is in said throttle closed condition thereof and said temperature responsive device has moved said movable stop member in one direction beyond a certain position thereof.

5,007,397

IGNITION TIMING CONTROL DEVICE

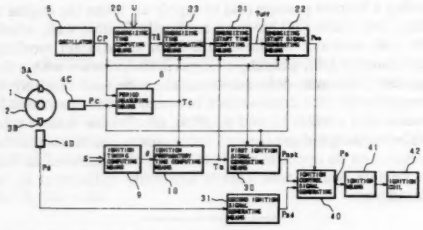
Masahira Akasu, Himeji, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Mar. 7, 1989, Ser. No. 320,128

Claims priority, application Japan, Mar. 7, 1988, 63-54303; Mar. 7, 1988, 63-54304; Mar. 7, 1988, 63-54305

Int. Cl.[5] F02P 5/15

U.S. Cl. 123—422 **20 Claims**



1. An ignition timing control device comprising,

a first position detecting means for detecting the first crank angle position of an engine,

a second position detecting means for detecting the second crank angle position different in angle from said first crank angle position,

a revolution period measuring means for measuring the engine revolution period in reference to at least one of said first and second crank angle positions,

an energizing time computing means for computing an energizing time used to increase the primary current of an ignition coil of said engine to a specified rate,

an ignition timing computing means for computing the ignition timing corresponding to the current running condition of the engine,

an ignition stand-by time computing means for computing stand-by time for ignition after detection of the first crank angle position in reference to both said revolution period and said ignition time,

an energizing preparatory time computing means for computing preparatory time for energizing the ignition coil after detection of the first crank angle position in reference to both said ignition stand-by time and said energizing time for the ignition coil,

an energizing preparatory time compensating means for estimating the subsequent running condition of the engine and compensating said computed energizing preparatory time according to said estimated subsequent running condition of the engine,

an energizing start command generating means for producing a command signal for commencement of energizing the ignition coil when the energizing preparatory time from the detection of the first crank angle position has expired,

first ignition command generating means for producing a command signal for interrupting energizing the ignition coil when the ignition stand-by time from the detection of the first crank angle position has expired,

second ignition command generating means for producing a command signal for interrupting energizing the ignition coil on detection of the second crank angle position, and

an ignition control means for starting energizing the ignition coil upon output of the said energizing start command and interrupting energizing the ignition coil according to any one of said first and second ignition commands outputted earlier;

wherein the energizing preparatory time compensating means compensates the energizing preparatory time in reference to the estimated engine revolution period.

5,007,398

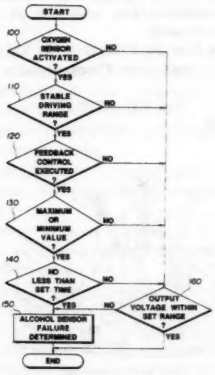
ALCOHOL SENSOR FAILURE DETECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Masuo Kashiwabara, Gunma, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isezaki, Japan

Filed Apr. 12, 1990, Ser. No. 507,835

Int. Cl.[5] F02D 41/22

U.S. Cl. 123—479 **8 Claims**



1. An alcohol sensor failure detection system for an internal combustion engine, comprising:

air/fuel mixture induction means for receiving an intake air and a fuel to form an air/fuel mixture to be fed into an engine combustion chamber;

fuel supply means for supplying a controlled amount of the fuel into said induction means;

an alcohol sensor associated with said fuel supply means for producing a first signal indicative of alcohol concentration contained in the fuel to be fed into said induction means from said fuel supply means;

sensor means for producing a second signal indicative of an air/fuel ratio of the air/fuel mixture;

first means for deriving a first amount of the fuel to be fed into said induction means from said fuel supply means, said first amount derived based on said first signal and predetermined other signals indicative of respective engine operating conditions;

second means for deriving a correction coefficient variable between predetermined maximum and minimum values depending on said second signal, said correction coefficient being derived through a FEEDBACK control which is executed in a predetermined engine driving range such that the air/fuel ratio of the air/fuel mixture is maintained at a target value in said predetermined engine operating range with a second amount of the fuel derived by third means which corrects said first amount with said correc-

tion coefficient, said second amount of the fuel being fed into said induction means from said fuel supply means;

fourth means for determining whether said FEEDBACK control is executed;

fifth means, in response to a positive decision of said fourth means, for determining whether said correction coefficient is said predetermined maximum or minimum value;

sixth means, in respone to a positive decision of said fifth means, for measuring a time in which said correction coeffient is retained to said predetermined maximum or minimum value;

seventh means for determining a failure of the alcohol sensor when said measured time is no less than a predetermined value.

5,007,399

METHOD AND APPARATUS FOR SELF-DIAGNOSIS OF AIR LEAKAGE IN CONTROL SYSTEM OF INTERNAL COMBUSTION ENGINE

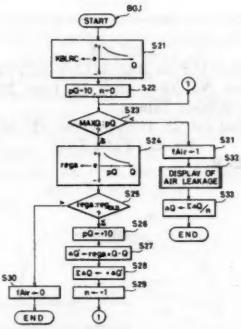
Shinpei Nakaniwa, Isesaki, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isesaki, Japan

Filed May 25, 1990, Ser. No. 528,615

Claims priority, application Japan, May 25, 1989, 1-130025

Int. Cl.[5] F02M *51/00*

U.S. Cl. 123—489 **6 Claims**



1. A method for the self-diagnosis of the leakage of air in a control system of an internal combustion engine, in which a flow quantity of air sucked in the internal combustion engine is detected and an engine control quantity including at least a quantity of a fuel to be supplied into the engine is set based on the detected air flow quantity, said method comprising setting an air-fuel ratio correction value for correcting the fuel supply quantity set based on the detected value of the sucked air flow quantity so that the air-fuel ratio in an air-fuel mixture sucked into the engine, which is detected through the detection of an exhaust component of the engine, is brought close to a target air-fuel ratio, wherein when there is observed a tendency that the proportion of the correction of the fuel supply quantity by the set air-fuel ratio correction value increases in a correction-increasing direction in a driving region having a smaller sucked air flow quantity, it is judged that the leakage of air into the suction system of the engine occurs.

5,007,400

HYDRAULIC CONTROL DEVICE FOR FUEL INJECTION SYSTEMS OF INTERNAL COMBUSTION ENGINES

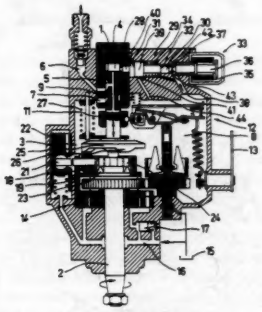
Rudolf Babitzka, Kirchberg-Neuhof, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 24, 1989, Ser. No. 328,396

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1988, 3819996

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—506 **17 Claims**



1. A hydraulic control for fuel injection systems of internal combustion engines; comprising,

a piston cylinder;

a pump piston in said piston cylinder, a pump piston work chamber (4) formed by said pump piston and said piston cylinder;

a stepped control piston (29) having a large diameter end (39) having a first control face (31) and a smaller diameter end having a smaller second control face (32) guided axially displaceably and radially sealingly in a corresponding stepped housing bore (30) forming a control chamber (40) and a closable work chamber (42), said first control face (31), can be acted upon by fluid from said piston work chamber present in said control chamber (40) against a pressure acting on said second control face in said closable work chamber (42) defined by said housing bore (30) and by said second control face (32) embodied by said smaller diameter face end (32) of the control piston (29) remote from the larger diameter first control face (31); a rear side of said larger diameter end of said stepped control piston being subjected to a fluid therein and a biasing force,

a controllable outflow relief conduit (38) extending from said closable work chamber (42) to a fluid-filled suction chamber (8); said controllable outflow conduit including a valve seat (37) with a predetermined maximum opening cross-section;

a control valve (33) operative relative to said valve seat (37) for a fuel flow control between said closable work chamber and said suction chamber, said control valve thereby controlling a movement of said control piston under action of fuel pressure in said control chamber and thereby controlling a take-off fuel quantity out of the pump work chamber via a relief conduit (44);

said control valve (33) having a movable valve element when closed having an end with a functional face (43) exposed to a pressure in said closable work chamber (42), said pressure acting in the opening direction of the movable valve element and being delimited by said maximum opening cross section; and

a ratio of said first control face (31) to that of said second working face (32) is equal to or smaller than a ratio of said second working face (32) to said functional face (43) of said movable valve element.

5,007,401

MAGNETIC VALVE CONTROLLED INJECTION DEVICE

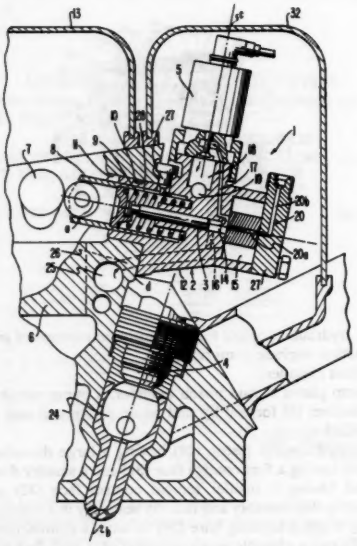
Michael Grohn, Waiblingen-Hegnach; Mario Mürwald, Kernen; Frank Thoma, and Karlheinz Hoffmann, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Sep. 30, 1987, Ser. No. 102,711

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1986, 3633136

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—509 18 Claims



1. A magnetic valve controlled fuel injection device comprising:

a fuel pump in a pump casing; and

a fuel nozzle for internal combustion engines; a mounting means hole for the fuel pump casing in a cylinder head of the engine; a guide fuel pump piston means in the casing displaceable longitudinally thereof by a camshaft means via a drive element, supported from the cylinder head side; said pump piston means shutting off a control hole emerging in a pump working space; a second mounting hole means provided in the cylinder head for the fuel nozzle; pressure conduit means starting from the pump working space and leading to the fuel nozzle and to a magnetic valve means controlling the beginning of pumping and the end of pumping as a function of operating parameters of the internal combustion engine; the magnetic valve means forming a structural unit jointly with at least one of the fuel pump and the fuel nozzle; the first mounting hole means for the pump being provided in the cylinder head; the pump being located separately from the fuel nozzle and connected to the fuel nozzle by a relatively short exposed pressure pipe means; the first mounting hole means for the pump allowing for unencumbered removal of the pump from the camshaft means; the fuel nozzle being independently fastened to the cylinder head by said second hole mounting means to be removable towards the outside of the engine; and a portion of the casing, facing away from the drive element and the magnetic valve means being both located outside the space enclosed by the cylinder head and a cylinder head cover.

5,007,402

INTAKE SYSTEM FOR A MIXTURE-COMPRESSING INTERNAL-COMBUSTION ENGINE

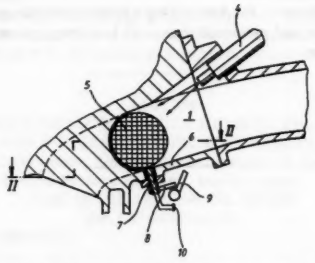
Dieter Scherenberg, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Fed. Rep. of Germany

Filed Jun. 28, 1990, Ser. No. 544,833

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1989, 3921739

Int. Cl.[5] F02M *31/00*

U.S. Cl. 123—549 12 Claims



11. A method of operating an intake system for a mixture-compressing internal combustion engine, having an electrically heatable heating element of flat form which is arranged in the intake channel downstream of a fuel-injection nozzle and transversely relative to the direction of flow and which is intended for heating the fuel/air mixture, wherein the heating element is made rotatable in such a way that, above a specific engine cooling-water temperature, it can be transferred from its transverse working position into a position of rest lying in the direction of flow,

said method including controlling the position of the heating element as a function of the engine cooling water temperature.

5,007,403

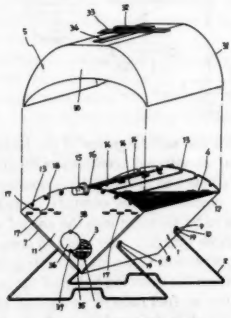
FAN-SHAPED BARBECUE KETTLE

Ming-Tang Chen, No. 23-4, Alley 21, Lane 205, Yong Xing Road, Dali, Taichung, Taiwan

Filed Jul. 25, 1990, Ser. No. 557,041

Int. Cl.[5] F24B *3/00*

U.S. Cl. 126—25 R 7 Claims



1. A fan-shaped barbecue kettle, comprising:

a kettle shell, which is a hollow body having fan-shaped end walls with a pair of legs connected to two side walls and either of whose fan-shaped end walls has a convexly arc upper rim wherein a few recesses are provided in an opposing manner to support the ends of a barbecue spit and there is provided a fixed hole in the vicinity of a central recess to which a motor may be secured to drive a

barbecue spit to turn; a groove created by some inwardly extending convex points on either of the fan-shaped end walls to allow lateral insertion thereto of a roasting grill to take position at a height about equal to the height of said side walls; there being provided an air inlet in the lower half central portion of either fan wall;

said pair of legs bent to be triangle-like without a head angle and having two L-ends which can get caught and connected to said kettle shell's two side walls;

a roasting grill, comprising two separable roasting grills, each being formed of two narrower roasting grills pivoted together, respectively inserted in said groove of the fan-shaped end wall from along the kettle shell's side wall to make out a plane roasting grill;

a lid, which is shaped in conformance to the kettle shell's upper configuration and has two side plates concavely arc-shaped, and the top center of which is provided with a handhold which is pivotedly connected to a connection piece of an air-outlet flute provided at the same location, so that turning said handhold may control said air-outlet flute to open or close;

an air inlet which comprises a hole and a slightly larger adapted cover, the hole being provided in a lower half of either fan-shaped end wall within the contact with a charcoal support grill while the cover is provided with two lugs, one said lug being riveted above the hole whereby the degree of opening of the hole is controlled by moving the cover via the other lug.

5,007,404

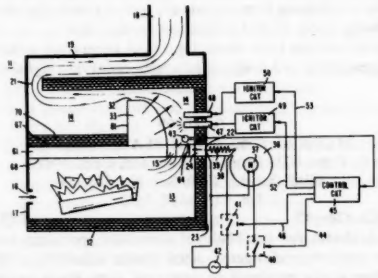
WOODSTOVE FOR HEATED AIR FORCED INTO A SECONDARY COMBUSTION CHAMBER AND METHOD OF OPERATING SAME

Robert E. Hall, Cary, N.C.; Graig A. Spolek, Portland, Oreg.; John H. Wasser, Raleigh, and Nelson L. Butts, Hillsborough, both of N.C., assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Filed Jun. 26, 1990, Ser. No. 543,312

Int. Cl.[5] F24C *1/14*

U.S. Cl. 126—77 **43 Claims**



1. A woodstove comprising a primary combustion chamber for receiving a load of wood fuel, a secondary combustion chamber in fluid flow relation with the primary chamber, fan means for forcing air from outside the woodstove into the secondary chamber, the air from outside the woodstove forced into the secondary chamber being heated prior to entering the secondary chamber, and means for controlling the fan means in response to the temperature of gases in the secondary chamber.

5,007,405

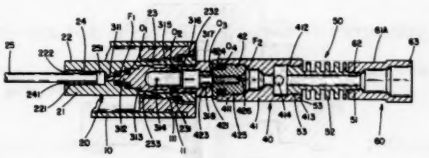
SOLDERING TOOL

David Hsu, 801, No. 125, Sec. 3 Roosevelt Rd., Taipei, Taiwan

Filed Apr. 24, 1990, Ser. No. 513,617

Int. Cl.[5] B23K *3/02*

U.S. Cl. 126—414 **10 Claims**



1. A gas powered soldering tool comprising a cylindrical gas tank **(10)** at the rear end thereof, said gas tank having at the rear end thereof a gas intake rod **(25)**, for the storage of fuel gas and serving as a tool holder, and having a soldering tip **(61B)** at the front end thereof, a rear barrel assembly **(20)** and a front barrel assembly **(40)**, said rear barrel assembly and said front barrel assembly containing the pressure regulation means and switching means **(317)**, said rear barrel being held firmly at the front end thereof to said gas tank, said rear barrel assembly and said front barrel assembly being connected by a connector **(42)**, said connector being part of said front barrel assembly, the major part of said rear barrel assembly being disposed within said gas tank, said rear barrel assembly having a channel **(221)** in the interior thereof for communication with said gas intake rod, a valve assembly **(30)** between said rear barrel assembly and said front barrel assembly, first threading means **(233, 313)** for connecting the front end of said rear barrel assembly to said valve assembly, said valve assembly comprising at the rear end thereof a stem **(31)**, a needle valve **(311)** projecting to the rear from said stem, a gas inlet orifice **(314)** in said stem, and switching means **(317)** at the front end of said valve assembly, said stem being hollow from said gas inlet orifice to the front end of said valve assembly to provide a passage for communication with said front barrel assembly, said front barrel assembly having a nipple **(422)** at the rear end thereof which provides a passage **(424)** and a nozzle **(426)** in front of said passage, second threading means **(318, 423)** for connecting said front barrel assembly to said nipple, said front barrel assembly being provided with air inlet orifices **(414)** and serving as a chamber for mixing air with said gas exiting from said nozzle, a cooling fin unit **(50)** disposed in front of said front barrel assembly, third threading means **(413, 53)** connecting said cooling fin unit with said front barrel assembly, a passage **(50)** provided within said cooling fin unit extending to the soldering tip, whereby a gas route is completed from said intake rod, through said rear end passage **(221)** of said rear barrel assembly, said needle valve, said gas inlet hole **(314)**, through said valve, the said nozzle, said air-gas mixing space **(414)**, leading within said passage of the fin unit to the fuel tip.

5,007,406

BENDING CONTROL DEVICE OF ENDOSCOPE

Nagashige Takahashi, and Teruo Ouchi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1989, Ser. No. 429,006

Claims priority, application Japan, Nov. 4, 1988, 63-280061; Nov. 4, 1988, 63-280062

Int. Cl.[5] A61B *1/00*

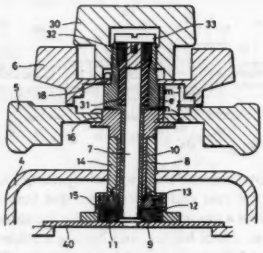
U.S. Cl. 128—4 **15 Claims**

1. A bending control device of an endoscope for bending a bendable portion, formed at the distal end of an insert part of the endoscope, by manual operation of a control part connected to the proximal end of said insert part, comprising:

an up and down bending control knob rotatably and detachably provided on said control part to control ending of

said bendable portion in upward and downward directions;

a right and left bending control knob rotatably and detachably provided on said control part, in coaxially superposed relation to said up and down bending control knob,



to control ending of said bendable portion in rightward and leftward directions; and

a single attaching and removing means for manually attaching and removing both of said bending control knobs to and from said control part.

5,007,407

ENDOSCOPE HAVING PICTURE IMAGE FREEZE DEVICE

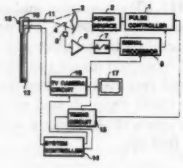
Katsuya Kikuchi, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 23, 1989, Ser. No. 397,784

Claims priority, application Japan, Aug. 23, 1988, 63-207436

Int. Cl.[5] A61B *1/04, 1/06*

U.S. Cl. 128—6 **15 Claims**



1. An endoscope including a scope, comprising:

light source means for emitting at least one light pulse in a boundary portion of adjacent first and second fields;

means for obtaining photoelectrically a detection signal from the light pulse;

means for calculating a difference between first and second field illuminances of the light pulse from the detection signal; and

means for controlling the light source means depending on the difference, to reduce the difference to at least a predetermined value.

5,007,408

ENDOSCOPE LIGHT SOURCE APPARATUS

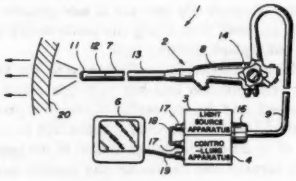
Shouichi Ieoka, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

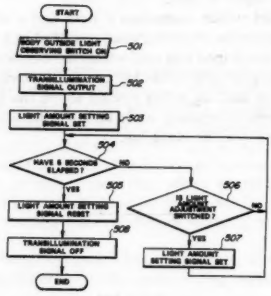
Filed Nov. 7, 1989, Ser. No. 432,642

Claims priority, application Japan, Mar. 16, 1989, 64-65056; Oct. 12, 1989, 64-267183

Int. Cl.[5] A61B *1/06*

U.S. Cl. 128—6 **34 Claims**





1. An endoscope apparatus comprising:

an endoscope provided with an insertable part tip part to be inserted into a body cavity and having an observing window for observing an object to be imaged and an illuminating window for emitting an illuminating light to illuminate said object;

a light source apparatus including an illuminating light feeding means for generating an illuminating light to be fed to said endoscope and a light amount increasing means for increasing for a preset time the light amount of the illuminating light generated by said illuminating light feeding means when a body outside light observing signal is input for confirming from outside the body a position within the body cavity of said endoscope tip part; and

a body outside light observing signal generating means for generating said body outside light observing signal.

5,007,409

MEDICAL SPECULUM BLADE SHEATH

Susan G. Pope, 6025 Bruns Ct., Oakland, Calif. 94611

Filed Oct. 12, 1989, Ser. No. 420,759

Int. Cl.[5] A61B *1/32*

U.S. Cl. 128—17 **3 Claims**

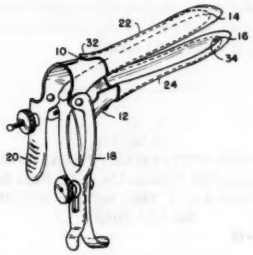
1. A sheath for the blade of a medical speculum having upper and lower elongated metal blades adjustably coupled together at the proximal or rear end, each blade having a substantially semicircular cross section terminating at a distal end, said sheath comprising:

a soft resilient material having a semicircular cross section with a convex first surface and concave second surface separated to form an arcuate longitudinal pocket between an open first end and a closed distal end adapted to receive the speculum blade;

a solid tip on said resilient material, said tip extending past

the distal end of said pocket and tapered to a thin soft edge;

a finger tab of material extending lengthwise from said first convex surface of said resilient material at said open first end; and

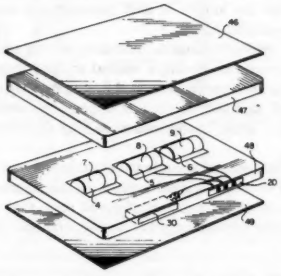


a vent hole between said arcuate pocket and at least one surface of said sheath adjacent the closed distal end thereof to facilitate installation and removal of said sheath from a speculum blade.

5,007,410
VIBRATING MATTRESS

Sabrena R. DeLaney, 200 Hampstead Ave., 206-C, Savannah, Ga. 31405

Filed Nov. 20, 1989, Ser. No. 440,059
Int. Cl.[5] A61H *1/00*
U.S. Cl. 128—33 **2 Claims**



1. In a mattress of the type adapted for imparting vibrations to a reclining human, the combination comprising:

(a) top and bottom resilient members sandwiched upon each other;

(b) at least two vibrating units positioned between said resilient members, each vibrating until including:

(i) a frame support and a protective housing mounted securely thereto;

(ii) an eccentric motor mounted upon said frame and within said protective housing, further including a shaft supporting an adjustable eccentric weight as a control for varying the amplitude of vibrations;

(iii) a power source and enabling circuit activating said motor in the form of a storage battery positioned on one side of said mattress and between said resilient members and externally accessible to facilitate battery charge, said power source having a protective pivoted cover with closure;

(iv) and on/off switch within said circuit and presented on one side of said resilient members, so as to be externally actuable;

(v) a safety light mounted adjacent each on/off switch, so as to enable monitoring and operation of each said vibrating unit;

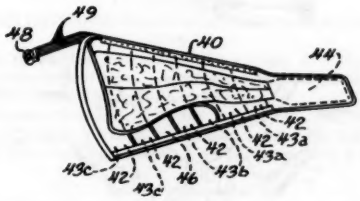
(vi) a pivotable protective cover with closure for each said switch; and

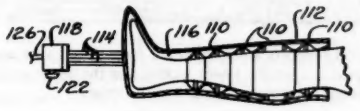
(c) a resonating means in the form of a variable resistor positioned in said enabling circuit, so as to vary the frequency vibration of each said vibrating unit.

5,007,411
DEVICE FOR APPLYING COMPRESSIVE PRESSURES AGAINST A PATIENT'S LIMB

John F. Dye, Bridgewater, Mass., assignor to The Kendall Company, Mansfield, Mass.

Filed Apr. 12, 1989, Ser. No. 336,984
Int. Cl.[5] A61H *9/00*
U.S. Cl. 128—64 **29 Claims**





1. A device for applying compressive pressures against a patient's limb during periodic compression cycles comprising:

a sleeve for applying pressure against a length of a patient's limb, said sleeve having a plurality of chambers arranged longitudinally along the sleeve;

means for intermittently inflating each of said chambers to provide a predetermined pressure during periodic compression cycles; and

means for deflating said chambers to establish a base static pressure after each said compression cycle.

5,007,412
BACK SUPPORT VEST

Terry L. DeWall, 6110 N. 100th Plz., Omaha, Nebr. 68134

Filed Jun. 11, 1990, Ser. No. 535,686
Int. Cl.[5] A61F *5/02*
U.S. Cl. 128—78 **8 Claims**

1. A back support vest, comprising:

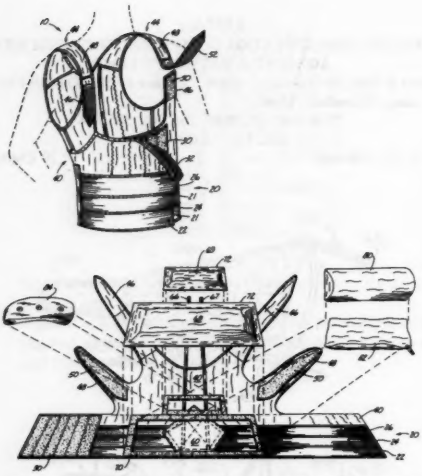
a lower back supporting section including an elastic material disposed to encircle a human body in the lumbar and lumbosacral region

an upper back support section having front and rear lateral portions and including a non-elastic material attached to and extending above said lower section and disposed to encircle the body in the thoracolumbar and thoracic region and a common means for releasably securing the ends of both the upper and lower sections includes overlapping ends attached with a hook and loop type fastener; wherein said fastener extends over the entire opposing surfaces of the overlapping ends of the upper and lower sections;

a pair of shoulder straps disposed to join front and rear lateral portions of the upper section; and,

a reinforced section including multiple layers of non elastic material attached to said vest and disposed to span the lower section and the upper section, said reinforced sec-

tion being centered on and extending across the dorsolumbar region and extending upwardly therefrom, and,



vertical supports attached to the rear of said vest and disposed to span the lower section and the upper section in spaced parallel relationship to the spine.

5,007,413

SUPPORTING DEVICE FOR USE IN FIRST AID TO PERSONS INJURED IN ACCIDENTS OR THE LIKE

Halldis Aalvik Thune, Loveien 30, 3500 Honefoss, Norway

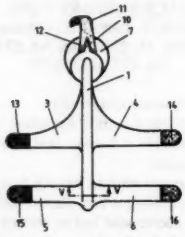
PCT No. PCT/NO86/00031, § 371 Date Dec. 11, 1986, § 102(e) Date Dec. 11, 1986, PCT Pub. No. WO86/05968, PCT Pub. Date Oct. 23, 1986

PCT Filed Apr. 17, 1986, Ser. No. 9,327

Claims priority, application Norway, Apr. 18, 1985, 851560; Nov. 22, 1985, 854673

Int. Cl.[5] A61F *5/02*

U.S. Cl. 128—78 **6 Claims**



1. A supporting device for use in administering first aid to a person injured in an accident, particularly to a person having a back and/or neck injury, said device comprising:

a main member to be positioned centrally along the back of an injured person, said main member having formed therein an elongated pocket opening upwardly in the normal position of use;

fastening members extending from said main member at positions to be mounted around the abdominal and chest area of the injured person and around the head or neck of the injured person;

said main member and said fastening members being formed of flexible material; and

an elongated supporting member in the form of a substantially flat metal rod accommodated in said pocket of said main member in a manner such that said metal rod may be selectively manually pulled from and pushed into said pocket, said metal rod having a length sufficient to support the back and neck of the injured person when said metal rod is within said pocket.

5,007,414

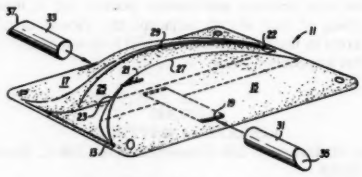
SPINE STRETCHER AND ALIGNER

Charles D. Sexton, 944 Waialae Cir., NE., Palm Bay, Fla. 32905

Filed Aug. 1, 1989, Ser. No. 387,729

Int. Cl.[5] A61F *5/02*

U.S. Cl. 128—78 **11 Claims**



1. A spine stretcher and aligner comprising

a base;

a first resilient member extending above said base, said first member having a first arcuate upper edge extending substantially the length of said member and extending upwardly of said base;

a second resilient member extending above said base, said second member having a second arcuate upper edge opposed to and spaced from said first upper edge of said first member, said second arcuate upper edge having substantially the same configuration as said first arcuate upper edge;

said first and second arcuate upper edges having a curvature greater than the normal lordosis of the human spine;

said arcuate edges being configured such that the apex of said upper arcuate edges is nearest one end of said members.

5,007,415

JOINT BRACE

DeLos E. Marion, deceased, late of Goodland, Ind. by Martha M. Marion, heir , assignor to John E. Garber, Indianapolis, Ind., a part interest

Filed Aug. 4, 1989, Ser. No. 389,696

Int. Cl.[5] A61F *5/00*

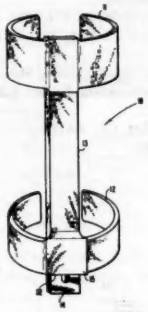
U.S. Cl. 128—80 C **16 Claims**

1. A brace for a human joint comprising:

bending means positionable adjacent a human joint and being operable to limit movement of said joint in certain directions but allowing pivoting action of said joint about a joint movable pivot axis, said bending means having a first end and an opposite second end and including a plurality of bendable strips extending therebetween being slidably mounted together in side by side relationship and bendable about a non-fixed strip axis;

first mounting means on said first end of said bending means operable to mount the brace on one side of said human joint and limit relative motion between said first end and said one side; and,

second mounting means on said second end of said bending means operable to mount the brace on the other side of

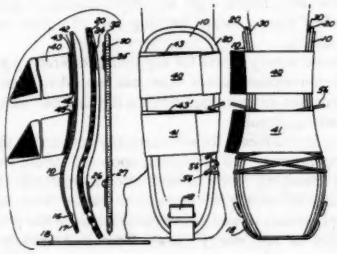


said human joint and limit relative motion between said second end and said other side.

5,007,416
THERAPEUTIC ANKLE SUPPORT SYSTEM

Paul W. Burns, 36 Greco La., Warwick, R.I. 02886, and Gary Burns, 512 Old Baptist Rd., North Kingstown, R.I. 02852

Filed Apr. 12, 1990, Ser. No. 507,915
Int. Cl.[5] A61F *3/00*
U.S. Cl. 128—80 H **5 Claims**



1. Orthopedic splint comprising a pair of rigid arcuately shaped shells, said sheels having a pair of spaced slots at one end thereof, a first flexible foam pad insert having the shape of the shell and substantially coextensive therewith, means securing a first said insert to each said shell, said first insert having first surface fastener patches thereon, a second flexible therapeutic pad insert having second surface fastener patches that releasably engage the surface fastener patches on the first insert, fastener straps for encircling the exterior of the shells when the shells are fitted about a body part.

5,007,417
ANKLE BRACE

Kelly M. Bender, Ashland, Wis., assignor to Mikros U.S.A., Inc., Ashland, Wis.

Filed Apr. 2, 1990, Ser. No. 503,056
Int. Cl.[5] A61F *3/00, 5/00, 13/06*
U.S. Cl. 128—80 H **20 Claims**

1. An ankle brace comprising:

a flexible base configured to fit around the rearward and side portions of the foot and ankle having medial and lateral forward edges positionable in straddling spaced apart relationship to the foot and ankle on medial and lateral sides thereof;

tongue means separate from the base configured to cover the front superior ankle and foot portions between the lateral and medial forward edges of the base, said tongue means having a tongue member narrower than the distance between the forward edges of the base when positioned on a foot and a first edge positionable in parellel spaced side-by-side relationship to the medial edge of the base, and a second edge positionable in parallel spaced side-by-side relationship to the lateral edge of the base when the base and tongue means are installed on a foot;

first lace fastening means including lace eyelets and a lace cooperating between the first edge of the tongue member and the medial edge of the base to fasten them together, and second lace fastening means including lace eyelets and a lace cooperating between the second edge of the tongue means and the lateral edge of the base to fasten them together and secure the tongue member and the base in encompassing relationship to a foot and ankle.

5,007,418
RESILIENT SEMI-RIGID ORTHOPEDIC SUPPORT DEVICES

Dennis C. Bartizal, Woodbury, and Anthony J. Campagna, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 83,685, Aug. 7, 1987, Pat. No. 4,893,617, which is a continuation-in-part of Ser. No. 903,281, Sep. 3, 1986, Pat. No. 4,968,542. This application Nov. 9, 1989, Ser. No. 433,846
Int. Cl.[5] A61F *5/04*
U.S. Cl. 128—90 **23 Claims**

1. An orthopedic support material, comprising:

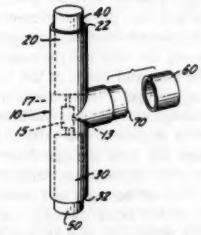
a flexible sheet material impregnated with a curable resin which cures upon exposure to a curing agent into a resilient and semi-rigid state having an Immobilization Value between about 45 pounds and about 400 pounds and a Resiliency Value of at least about 80 percent; and

a layer of cushioning material adjacent said resin-impregnated flexible sheet material.

5,007,419
INHALER DEVICE

Allan Weinstein, 9205 Pegasus Ct., Potomac, Md. 20854, and Robert Weinstein, 6903 Alderley Way, West Bloomfield, Mich. 48033

Filed Sep. 25, 1989, Ser. No. 395,776
Int. Cl.[5] A61M *11/00*
U.S. Cl. 128—200.23 **11 Claims**



1. An inhaler device comprising a housing having first and second chambers,

said first chamber having a first internal compartment and a first removable canister of a first medication housed in said first compartment,

said second chamber having a second internal compartment and a second removable canister of a second medication housed in said second compartment,

said housing further having at least one common outlet nozzle in fluid communication with said canisters of medication, and means for independently allowing aerosol

spray from either one of said first or second canisters to be discretely released through said common outlet nozzle.

5,007,420

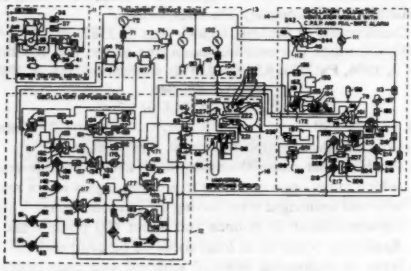
VENTILATOR HAVING AN OSCILLATORY INSPIRATORY PHASE AND METHOD

Forrest M. Bird, P.O. Box 817, Sandpoint, Id. 83864

Continuation of Ser. No. 671,491, Nov. 14, 1984, abandoned, which is a continuation-in-part of Ser. No. 516,133, Jul. 21, 1983, Pat. No. 4,592,349, which is a continuation-in-part of Ser. No. 291,622, Aug. 10, 1981, abandoned, which is a continuation-in-part of Ser. No. 269,929, Apr. 3, 1981, abandoned, and Ser. No. 250,586, Jun. 2, 1981, abandoned. This application Jan. 14, 1988, Ser. No. 145,734

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—200.14 35 Claims



1. In a ventilator for use with a source of gas under pressure for supplying such gas to the airway of a patient, an inlet adapted to be connected to the source of gas, an outlet adapted to be connected to the airway of the patient, oscillator means having an inlet and an outlet, means coupling the inlet of the oscillator means to the inlet of the ventilator, and means coupling the outlet of the oscillator to the outlet of the ventilator and pneumatic control means coupled to the inlet of the ventilator and coupled to said oscillator means causing said oscillator means to supply successive small volumes of gas through the outlet of the oscillator means and the outlet of the ventilator to the airway of the patient to cause diffusive ventilation of the lungs of the patient, said pneumatic control means operating solely under pneumatic control, said oscillator means including a body having the inlet and the outlet, a flow passage interconnecting the inlet and outlet of the body, a valve seat encircling the flow passage, a valve member mounted in the body in the flow passage and being movable between open and closed positions with respect to the valve seat to control the flow of gas through the flow passage from the inlet to the outlet of the body, diaphragm means carried by the body for moving the valve member between said open and closed positions, said valve member being disposed on one side of the diaphragm means, a servo port mounted on the body on the other side of the diaphragm means, means connecting the outlet of the body to the servo port for supplying gas to one side of the diaphragm means for moving the diaphragm means to cause movement of the valve member to one of said open and closed positions, said means connecting the outlet of the oscillator means to the servo port including adjustable metering valve means for controlling the rate of flow of gas into and out of the servo port to thereby control the rate of oscillation of the oscillation means and thereby the frequency rate the successive small volumes of gas supplied to the outlet of the ventilator.

5,007,421

BREATHING APPARATUS

John S. S. Stewart, 74 The Common, Parbold, Wigan, Lancashire WN8 7EA, England

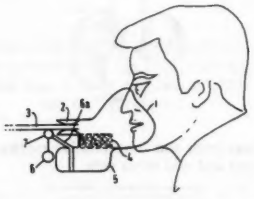
PCT No. PCT/GB86/00581, § 371 Date Jul. 28, 1987, § 102(e) Date Jul. 28, 1987, PCT Pub. No. WO87/01949, PCT Pub. Date Apr. 9, 1987

PCT Filed Sep. 30, 1986, Ser. No. 67,785

Claims priority, application United Kingdom, Oct. 1, 1985, 8524181

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—204.180 26 Claims



1. A breathing apparatus for persons, including aircraft passengers, said apparatus being operable in a first breathing mode to receive respiratory gasses from a first respiratory gas source and in a second breathing mode to receive respiratory gasses from a second respiratory gas source, comprising:

(a) conveyance means for conveying respiratory gasses to and from a person;

(b) first supply means for supplying respiratory gasses to said conveyance means from said first respiratory gas source the first supply means forming part of a first breathing circuit;

(c) second supply means for supplying respiratory gasses to said conveyance means from said second respiratory gas source, the second supply means forming part of a second breathing circuit;

(d) conversion means for automatically converting the mode of operation of the apparatus, upon activation, from said first breathing mode to said second breathing mode by cutting-off supply of respiratory gasses from said first supply means to said conveyance means while permitting supply of respiratory gasses from said second supply means to said conveyance means;

(e) carbon dioxide absorption means for absorbing carbon dioxide in said second breathing circuit after conversion of said mode of operation to said second breathing mode by said conversion means.

5,007,422

METHOD FOR COMBINER CARDIAC PACING AND DEFIBRILLATION

Benjamin Pless; Michael Sweeney, both of Menlo Park; Roger Winkle, Palo Alto, all of Calif., and Anthony Nathan, Bushey Heath, England, assignors to Ventritex, Inc., Sunnyvale, Calif.

Filed Jun. 6, 1989, Ser. No. 362,163

Int. Cl.[5] A61N *1/362*

U.S. Cl. 28—419 PG 23 Claims

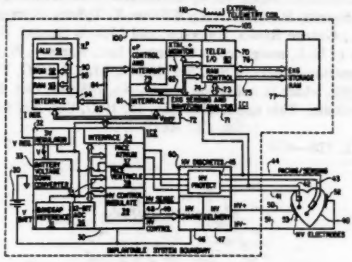
1. A method for treating cardiac arrhythmia with an implanted pulse generator having sensing leads adapted to be connected to the atrium and the ventricle, which comprises the steps of:

sensing the ventricle to determine if a ventricular arrhythmia is present;

sensing the atrium to determine if an atrial arrhythmia is present;

if the sensed atrial arrhythmia is determined to be more

severe than the sensed ventricular arrhythmia, then not treating for a ventricular arrhythmia; but



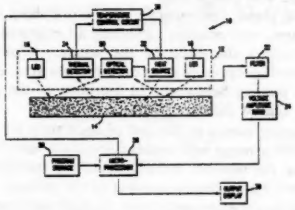
if the sensed atrial arrhythmia is determined to be less severe than the ventricular arrhythmia, then treating for a ventricular arrhythmia.

5,007,423

OXIMETER SENSOR TEMPERATURE CONTROL

Ronald L. Branstetter; Jonathan P. Jaeb, and Jeffrey M. Gabelmann, all of San Antonio, Tex., assignors to Nippon Colin Company Ltd., Japan

Filed Oct. 4, 1989, Ser. No. 417,209
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **19 Claims**



1. A blood oxygen saturation monitoring system for non-invasive measurement of oxygen saturation of arterial blood in tissue of a patient, comprising:

a first source of electromagnetic radiation at a first wavelength;

a second source of electromagnetic radiation at a second wavelength;

means for positioning said first and second sources of electromagnetic radiation on the patient so as to illuminate a sample of blood in the tissue;

detecting means for receiving electromagnetic radiation reflected by said sample of blood;

data processing means for calculating the blood oxygen saturation of said tissue responsive to said detected reflected electromagnetic radiation; and

means for maintaining said tissue at a predetermined temperature responsive to the temperature of said tissue.

5,007,424

POLAROGRAPHIC/AMPEROMETRIC MEASURING SENSOR

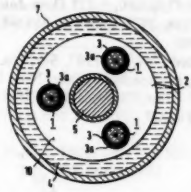
Walter Ahsbahs, Merzhausen, and Helmut Leist, Waldkirch, both of Fed. Rep. of Germany, assignors to Hellige GmbH, Freiburg, Fed. Rep. of Germany

Continuation of Ser. No. 236,108, Aug. 1, 1988, filed Jun. 29, 1990, Ser. No. 547,528

Claims priority, application European Pat. Off., Aug. 3, 1987, 87111196.9

Int. Cl.[5] G01N *27/404*
U.S. Cl. 128—635 **18 Claims**

1. A sensor element particularly adapted for transcutaneous, polarographic/amperometric measurement of oxygen partial pressure in the blood of a living organism, said sensor element having a body portion made of heat conducting insulating material and a measuring face at least a portion of the area of which constitutes a reference electrode surface, said measuring face having a gas permeable membrane tautly stretched thereover, a layer of electrolyte material dispersed between the said measuring face and the said gas permeable membrane, said measuring face also having disposed in the plane thereof at



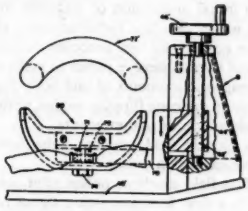
least one electrode assembly comprising a working electrode, a layer of insulating material completely surrounding the working electrode, said working electrode having a counter electrode completely surrounding said working electrode and disposed peripherally of the layer of insulating material to thereby separate said working electrode and said counter electrode with the said layer of insulating material and a sheath of insulation encircling said counter electrode to separate electrically said counter electrode from said reference electrode.

5,007,425

PATIENT AND COIL SUPPORT STRUCTURE FOR MAGNETIC RESONANCE IMAGERS

Denis W. Vanek, Cuyahoga Hts., and G. Neil Holland, Chagrin Falls, both of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Filed Aug. 19, 1988, Ser. No. 234,313
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653 A **5 Claims**



1. A support stand which is selectively positionable within an image region of a magnetic resonance imaging apparatus that includes a means for establishing a static magnetic field through the image region, a means for causing magnetic field gradients across the static magnetic field, a means for inducing magnetic resonance of selected dipoles of a patient within the imaging region, a means for receiving magnetic resonance signals emanating from the resonating dipoles, and an image reconstruction means for reconstructing an image representation from the received magnetic resonance signals, the support stand comprising:

a base constructed of a non-ferrous, non-conductive material;

a non-ferrous, non-conductive screw rotatably and vertically mounted in the base;

a follower which supports one of an orthopedic device and (ii) a resonance signal receiving coil, the follower being constructed of a non-ferrous, non-conductive material with a threaded vertical interior bore that threadedly receives the screw therein, the follower being movably

supported on the screw too be raised and lowered by relative rotation therebetween.

5,007,426

METHOD FOR DEPICTION OF MOVING PARTS IN A BODY BY NUCLEAR MAGNETIC RESONANCE EXPERIMENT

Patrick Le Roux, Gif sur Yvette, France, assignor to General Electric CGR S.A., Issy les Moulineaux, France

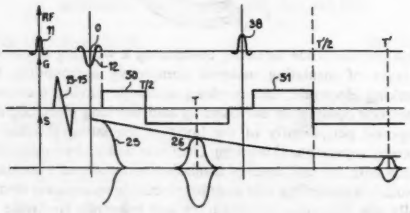
PCT No. PCT/FR87/00450, § 371 Date Jul. 18, 1988, § 102(e) Date Jul. 18, 1988, PCT Pub. No. WO88/04046, PCT Pub. Date Jun. 2, 1988

PCT Filed Nov. 13, 1987, Ser. No. 246,666

Claims priority, application France, Nov. 21, 1986, 86 16259

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653 OAF **2 Claims**



1. A method for depicting, in an image, moving parts in a body by nuclear magnetic resonance experiment comprising the steps of:

subjecting a part of said body firstly, to an orienting magnetic field and, secondly, while maintaining said orienting field, subjecting said part to several excitation sequences each of which includes, a first main step followed by a second main step, itself followed by a period of time during which it may be assumed that the equilibrium of magnetic moments is re-established.

said first main step including:

flipping an initial orientation of magnetic moments of said body by means of a first radiofrequency electromagnetic excitation comprising two successive excitation pulses,

applying said two successive pulses to make said orientation of said magnetic moments of said body flip by two equal and mutually opposite flipping angles, with respect to said initial orientation of said moments,

applying a bipolar field gradient pulse between said two successive excitation pulses,

applying first field gradient pulses after said excitation to induce, in a first free precession signal resulting from a free precession of said magnetic moments, first dephasings for discriminating contributions of each part of the body,

said first field gradient pulses including a gradient echo type pulse,

measuring and processing said first free precession signal, to represent said moving parts of the body,

said second main step beginning, after the first free precession signal is measured, said second main step includes the body being subjected to a second radiofrequency excitation to again cause the flipping with a flipping angle of the magnetic moments,

applying second field gradient pulses after said second excitation to induce, in a second free precession signal resulting from said free precession of magnetic moments, dephasing for discriminating contributions of each part of the body,

measuring and processing said second free precession signal, to also represent moving parts of the body,

and further processing together the first and second processed free precession signal in order to depict a pure speed or a pure density image.

5,007,427

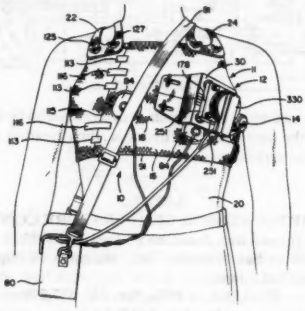
AMBULATORY PHYSIOLOGICAL EVALUATION SYSTEM INCLUDING CARDIAC MONITORING

Arata Suzuki, Ramsey, N.J.; William T. Tyberg, Springvalley, N.Y.; George Banks, Emerson, and Marcia Suzuki, Ramsey, both of N.J., assignors to Capintec, Inc., Ramsey, N.J.

Continuation-in-part of Ser. No. 46,854, May 7, 1987, Pat. No. 4,920,969, which is a division of Ser. No. 785,549, Oct. 8, 1985, abandoned. This application Sep. 15, 1987, Ser. No. 96,521

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—659 **9 Claims**



1. A vest for use in an ambulatory physiological evaluation system, said vest comprising:

a flexible, planar vest member to be worn about the torso of a patient, said member including an enlarged chest area that covers the chest of the wearer, a pair of strips disposed on opposite sides of said chest area, each of said strips passing below one of the arms of the patient and lying against the back of the patient;

fist securing means at the end of each strip for joining the strips to arrange said member about the torso in a snug fit so that the member remains relatively stationary relative to the torso during movement of the patient;

a pair of planar elongated straps, each of said straps spanning across one of the shoulders of said patient, one end of each strap terminating in means for movably mounted said strap to said chest area, the other end of each strap terminating in means for securing said strap to one of said strips of said vest member; quick release means dividing the vest top to bottom in a first area of the vest for covering the right side of a wearer's chest; and

mounting means on a second area of the vest for apparatus to be used in said evaluation system, said mounting means being located on a second area of the vest for covering a left part of the wearer's chest.

5,007,428

APPARATUS FOR EXAMINING A BODY OF LIVING TISSUES

David J. Watmough, Banchory, United Kingdom, assignor to The University Court of the University of Aberdeen, Aberdeen, United Kingdom

PCT Filed Apr. 21, 1988, Ser. No. 424,252, filed as PCT/GB88/00302 on Dec. 5, 1989, published as WO88/08272 on Nov. 3, 1988

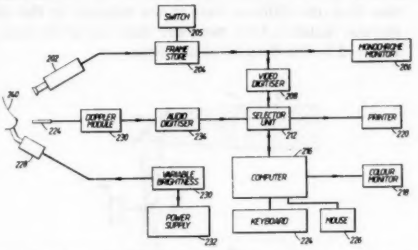
Claims priority, application United Kingdom, Apr. 21, 1987, 8709406

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—660.04 **6 Claims**

1. An apparatus for the examination of a body of living tissues, the apparatus comprising means for illuminating the body of living tissues with infra-red containing electromagnetic radiation, means for receiving electromagnetic radiation which is transmitted through the body of living tissues, means for producing an image of the received radiation, means for applying ultrasound to a region of the body of living tissues,

means for receiving reflected ultrasonic signals from the region, characterised by means for producing a signal which is representative of the velocity of blood flow in the region and



means for generating from the signal a graphical representation which provides an indication of blood flow velocity in the region.

5,007,429

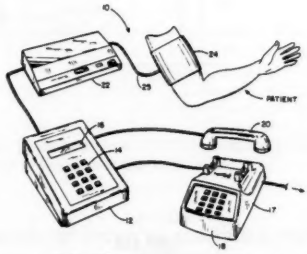
INTERFACE USING 12-DIGIT KEYPAD FOR PROGRAMMING PARAMETERS IN AMBULATORY BLOOD PRESSURE MONITOR

James E. Treatch, Phoenix, and James R. Mikesell, Scottsdale, both of Ariz., assignors to PulseTrend, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 98,550, Aug. 21, 1987, Pat. No. 4,830,018. This application Apr. 11, 1989, Ser. No. 336,244

Int. Cl.[5] A61B *5/022*

U.S. Cl. 128—677 **4 Claims**



1. In a user interactive data entry and data downloading system including a control unit having a stored program microcomputer, a prompt display and a 12-character telephone keypad, and a communication link to an ambulatory patient monitor, the ambulatory patient monitor including a stored program microcomputer, a method for directing user selection of blood pressure test parameters for transfer to the ambulatory patient monitor; the method comprising the steps of:

initially entering an idle routine from which any one of a plurality of menu items can be entered by selection of a predetermined key of the keypad, the menu items including a subroutine for assembling a set of blood pressure test parameters;

displaying on the prompt display indication of execution of the idle routine;

monitoring the keypad for selection of a key;

entering a subroutine upon selection of a key associated with the subroutine;

displaying on the prompt display indication of selection of the subroutine;

the step of displaying indication of entry of a subroutine including upon entry of the subroutine for assembling blood pressure test parameters, directing, through further visual prompts on the prompt display, selection by the user of blood pressure test parameters through the keypad to establish a blood pressure test regimen;

determining the reasonableness of the selected blood pressure test parameters upon selection;

rejecting a selected blood pressure test parameter if unreasonable and directing, through visual prompts, selection of a new blood pressure test parameter;

transferring the selected blood pressure test parameters to the ambulatory patient unit after completion of the set of blood pressure test parameters; and

exiting the assembly subroutine and returning to the idle state after completing transfer of the blood pressure test parameters to the ambulatory patient unit.

5,007,430

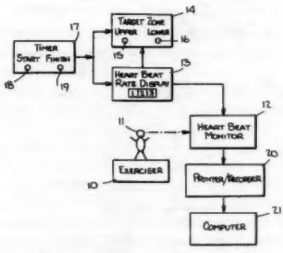
RHYTHMIC BIOFEEDBACK TECHNIQUE

Irving I. Dardik, R.D. 1, Box 253 Hillcrest Dr., Great Meadows, N.J. 07838

Filed Nov. 5, 1986, Ser. No. 927,176

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—696 **5 Claims**



1. A rhythmic biofeedback technique for inducing relaxation to counteract the adverse physiological and psychological effect of chronic stress on an individual of a given age and physical condition, the technique comprising the steps of:

A. electronically monitoring the heart beat of an individual being treated and displaying the prevailing rate to him as he undergoes a rhythmic conditioning session constituted by successive exercise-relaxation cycles extending for a predetermined period, each cycle having a duration which is a small fraction of said period;

B. electronically producing a first indication when the prevailing rate reaches a peak representing a predetermined safe upper limit and electronically producing a second indication when the prevailing rate reaches a predetermined acceptable lower limit, said predetermined upper and lower limits defining a target heart rate zone for the particular individual being treated, the boundaries of this zone being a function of the individual's age and physical condition; and

C. in the course of each cycle of the conditioning session requiring the individual to operate within said target zone by raising his level of exertion, as indicated by said first indication, to a peak representing said safe upper limit, following which he is required to reduce his exertion until he reaches said acceptable lower limit as indicated by the second indication at which a recovery-relaxation response takes place.

5,007,431

APPARATUS AND METHOD FOR UPDATED RECORDING OF IRREGULARITIES IN AN ELECTROCARDIOGRAM WAVEFORM

Robert F. Donehoo, III, Huntsville, Ala., assignor to Care Systems, Inc., Huntsville, Ala.

Filed May 3, 1988, Ser. No. 189,833

Int. Cl.[5] A61B *5/04*

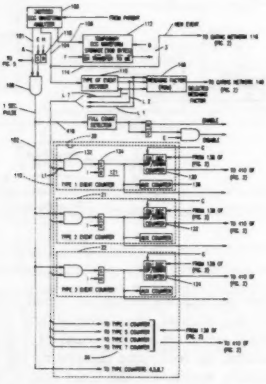
U.S. Cl. 128—696 **20 Claims**

1. A system for storing, on an updated priority basis, seg-

ments of an electrocardiogram (ECG) waveform from a patient containing at least one of a plurality of selected abnormal cardiac events, hereinafter referred to as event, said updated priority basis determined by selected characteristics comprising the ECG segment containing a new event not fully processed and stored by said system, type of the new event, age (A) of prior stored, like type events as the new event, weighing factor (WF) of the new event, and total number (T) of like type events stored prior to storing the new event, and comprising:

first memory storage means disposed for temporarily storing the characteristics of each said new event, and for maintaining a current total (T) of each different selected type of said event stored prior to storing the new event, and for incrementing said T of like type, prior stored said events as said new event by one;

second memory storage means comprising N memory blocks (MB's) for storing, where n is a positive integer, and on said updated priority basis upon occurrence of



each said new event, the characteristics of N events each stored in a different memory block;

first logic means responsive to said first memory storage means and operative on said second memory storage means for determining a highest product of (A)×(WF)×(T) in each said MB, said highest product identifying the memory block of said N memory blocks containing a lowest priority type of said event (LPEMB) and for decrementing by one the value of T contained in each said N memory block containing the like type of event as contained in said LPEMB; and

second logic means responsive to the decrementing of T by said first logic means for entering the characteristics of the new event in said LPEMB, replacing the characteristics of a prior stored said event in said LPEMB with the characteristics of the new event, and to increment by one the T in each said MB containing the like type of event as the type of new event now entered into the LPEMB.

5,007,432

RADIATION DETECTION METHOD AND APPARATUS

Hans J. Keller, Staefa, and Walter A. Kuster, Tuggen, both of Switzerland, assignors to Eltec Instruments, Inc., Daytona Beach, Fla.

Continuation of Ser. No. 42,709, Apr. 27, 1987, abandoned. This application Jul. 10, 1989, Ser. No. 377,725

Int. Cl.[5] A61B *5/00*

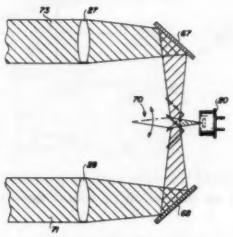
U.S. Cl. 128—736 **17 Claims**

1. A medical diagnostic apparatus for detecting the temperature differential between two sites on the surface of a person's body comprising:

a single thermal radiation detector;

a plurality of lenses arranged to respectively receive thermal radiation from different sites on the person's body along different optical paths and to focus the received radiation onto the single detector;

means for alternately interrupting the flow of thermal radiation from the different sites to the detector so that the thermal radiation from not more than one of the sites is received by the detector at any time;



means for converting the received thermal radiation from each site to corresponding temperature indicative signals;

means for averaging the temperature indicative signals derived from each corresponding site to determine the surface temperature of each site; and wherein

the plurality of lenses are concentric and lie in a common plane.

5,007,433

STIMULATION DEVICE

Joachim Hermsdörffer; Günther Galfe; Stefan Lautenbacher, all of München; Reinhard Korte, Göttingen; Hans-Joachim Krause, Göttingen/Elliehausen; Frans Krüll, Göttingen; Arno May, Göttingen; Dietmar Oberdorfer, Göttingen, and Ulrich Plüquett, Göttingen, all of Fed. Rep. of Germany, assignors to Phywe Systeme GmbH, Gottingen, Fed. Rep. of Germany

Filed Jun. 22, 1989, Ser. No. 369,720

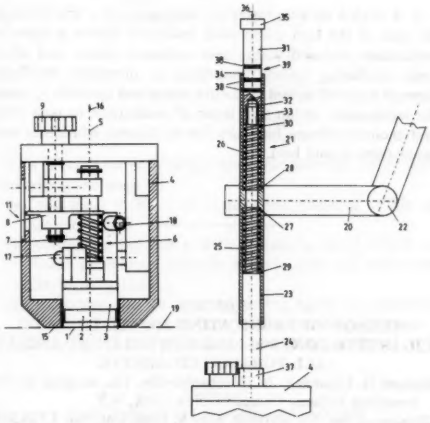
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1988, 3821219

Int. Cl.[5] A61B *19/00*

U.S. Cl. 128—742 **10 Claims**

1. A stimulation device for the determination of the temperature perception and pain sensation of a patient by cutaneous contact stimulation comprising a casing including a bearing surface for engaging the skin of the patient, a stimulator received in said casing adjacent the bearing surface of said casing and a Peltier element for changing the temperature of said stimulator, characterized in that the stimulator (1) is arranged moveably along an axis (5) in the casing (4), a first pressure means (6) for biasing with a force of a predetermined magnitude said stimulator toward a starting position in which the stimulator protudes a predetermined distance (14) from said casing beyond said bearing surface (15), and a second pressure means (21) for supporting said casing and biasing the bearing surface of said casing toward the skin of the patient with force

sufficient to retract said stimulator by moving said stimulator in a direction toward into said casing to a position in which the protruding portion of said stimulator becomes substantially coextensive with said bearing surface.

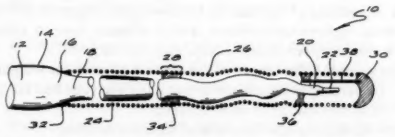


5,007,434

CATHETER TIP ATTITUDE CONTROLLING GUIDE WIRE

A. Thomas Doyle, Mountain View; William S. Tremulis, Redwood City, and Colleen L. McQueen, Santa Clara, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Feb. 7, 1989, Ser. No. 307,606
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—772 **21 Claims**



1. A guidewire which is adapted to control the attitude of the distal tip of a catheter slidably mounted thereover comprising:

(a) an elongated shaft having a proximal portion, a distal portion with a distal tip and an intermediate portion between the proximal and distal portions; and

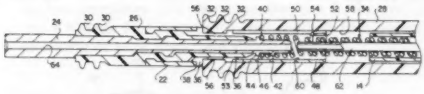
(b) the intermediate portion of the elongated shaft having a plurality of permanent bends along the length thereof spaced proximally at least 1.5 cm from the distal tip of the distal portion so that, upon the longitudinal movement of a catheter over the guidewire, the attitude of the distal tip of the catheter is thereby controlled.

5,007,435

CONNECTOR FOR MULTICONDUCTOR PACING LEADS

Phong D. Doan, Shoreview; James E. Upton, New Brighton; Douglas N. Hess, Maple Grove; Wayne R. Bass, Coon Rapids, and Keith A. Ufford, Maple Grove, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 198,540, May 25, 1988, Pat. No. 4,922,607. This application Apr. 23, 1990, Ser. No. 513,461
Int. Cl.[5] A61N *1/05*
U.S. Cl. 128—784 **7 Claims**



1. A connector pin assembly, comprising:

an elongated conductive connector pin having a proximal end and a distal end;

a first insulative sheath coaxially mounted around said connector pin, said first insulative sheath terminating proximal to the distal end of said connector pin;

first connector ring mounted around said first insulative sheath, said first connector ring having a proximal end a distal end, the distal end of said first connector ring terminating proximal to the distal end of said connector pin;

a first conductive extension electrically and mechanically coupled to the distal end of said connector ring and extending distally therefrom;

a first electrical conductor coupled to the distal end of said connector pin; and

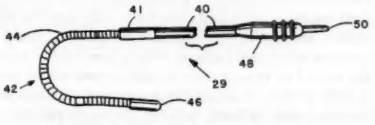
a second conductor electrically and mechanically coupled to the distal end of said extension.

5,007,436

CARDIOVERSION AND DEFIBRILLATION LEAD SYSTEM

Karel F. A. A. Smits, Oirsbeek, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 408,466, Sep. 18, 1989, abandoned, which is a continuation of Ser. No. 220,642, Jul. 18, 1988, abandoned, which is a division of Ser. No. 925,030, Oct. 30, 1986, Pat. No. 4,744,952, which is a division of Ser. No. 746,694, Jun. 20, 1985, Pat. No. 4,641,656. This application Mar. 26, 1990, Ser. No. 498,873
Int. Cl.[5] A61N *1/05*
U.S. Cl. 128—786 **7 Claims**



1. An implantable lead, comprising:

a connector assembly, including at least one electrical connector;

an elongated lead body having a proximal end and a distal end, said proximal end of said lead body mounted to said connector assembly, said lead body including a first segment having a generally straight configuration extending from said connector assembly to a first point, and a second, curved segment extending distal to said first point, said lead body including a first elongated electrode, exposed to the exterior of said lead body at least from said

first point to the distal end of said elongated lead body, and wherein said lead body also includes an elongated insulative sheath extending from said first electrode to said connector assembly; and

a conductor extending from said first electrode to said connector assembly, mounted within said elongated insulative sheath.

5,007,437

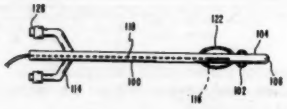
CATHETERS FOR TREATING PROSTATE DISEASE

Fred Sterzer, Princeton, N.J., assignor to MMTC, Inc., Princeton, N.J.

Continuation of Ser. No. 367,718, Jun. 16, 1989, abandoned. This application Apr. 19, 1990, Ser. No. 512,520

Int. Cl.[5] A61N *5/02*

U.S. Cl. 428—786 **15 Claims**



1. In a catheter adapted to be inserted into an orifice of a male patient for treating prostate disease, wherein said catheter comprises means including microwave antenna means for irradiating said patient's prostate with a given distribution of microwave field intensity, thereby to heat tissue of said patient to a temperature which tends to vary as a direct function of microwave power and as an inverse function of the distance of that tissue to said microwave antenna means, and wherein the maximum microwave power to be employed is limited to an amount at which the temperature of the patient's heated tissue most proximate to said microwave antenna means does not exceed a given safe maximum temperature; the improvement wherein said catheter further comprises:

an inflatable balloon inside of which said microwave antenna means is situated, said balloon being structured to have a cross-section which is expandable in size from a first value no larger than the cross-section of said orifice when said balloon is deflated to a second value substantially larger than the cross-section of said orifice when said balloon is inflated to a given pressure, said given pressure being sufficient to squeeze and compress tissue of said patient adjacent said balloon and permit the size of said balloon cross-section to be expanded to its second value;

whereby said catheter may be (1) inserted into said orifice while in a deflated state and positioned therein at a location at which both said balloon and said microwave antenna means are in cooperative relationship with said patient's prostate for effecting the irradiation of said patient's prostate with said given distribution of microwave field intensity when said catheter is fully inserted into said orifice, and (2) said balloon may be inflated to said given pressure when said catheter is fully inserted for expanding the size of its cross-section to said second value, resulting in both prostate tissue and that non-prostate tissue situated between said inflated balloon and said prostate tissue being squeezed and compressed so as thereby to increase the minimum distance between said microwave antenna means situated inside of said balloon and heated tissue of said patient; and

means for inflating said balloon to said given pressure;

whereby the maximum microwave power may be increased without exceeding said given maximum safe temperature and the temperature differential between the heated prostate tissue more proximate to said microwave antenna means and the heated prostate tissue more distal to said microwave antenna means is reduced.

5,007,438

ENDERMIC APPLICATION KITS FOR EXTERNAL MEDICINES

Shunro Tachibana, 1-6-18, Kusagae, Chuo-ku, Fukuoka-shi, Fukuoka-ken, and Uichi Shibata, Tokyo, both of Japan, assignors to Shunro Tachibana, Fukuoka and Meiji Seika Kaisha, Ltd., Tokyo, both of, Japan

Division of Ser. No. 120,555, Nov. 13, 1987, Pat. No. 4,821,740. This application Mar. 28, 1989, Ser. No. 329,914

Claims priority, application Japan, Nov. 26, 1986, 61-282703

Int. Cl.[5] A61N *1/00*

U.S. Cl. 128—798 **22 Claims**

1. A device for administering medication to a host through the skin of the host comprising enclosure means, a layer of medication disposed within said enclosure means, and ultrasonic oscillating means comprising an ultrasonic oscillator element disposed in said enclosure means and operable to cause the medication within said layer of medication to pass from said enclosure means into said skin to thereby administer said medication to said host.

5,007,439

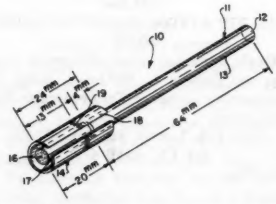
METHOD OF FABRICATING AN ALL-TOBACCO CIGARETTE CONTROLLING TAR DELIVERY AND AN ALL-TOBACCO CIGARETTE

Richard D. Chumney, Jr., Mechanicsville, Va., assignor to The American Tobacco Company, New York, N.Y.

Division of Ser. No. 861,169, May 9, 1986, Pat. No. 4,726,385. This application Nov. 17, 1987, Ser. No. 121,840

Int. Cl.[5] A24D *3/06*

U.S. Cl. 131—331 **13 Claims**



1. A method of fabricating an all-tobacco cigarette having a tobacco lighted-end column and a tobacco tip-end column, each tandemly-arranged, comprising the steps of:

(a) selecting the length of the tip-end column for a cigarette of particular length and controlling the type and compaction of tobacco in such column;

(b) fabricating the lighted-end tobacco column;

(c) fabricating the tip-end tobacco column to consist of at least about 20% expanded tobacco with the remainder unexpanded tobacco

(d) placing a paper wrapper having ventilation holes of predetermined size and number formed therein over said tip-end column, and

(e) assembling the tip-end and lighted-end tobacco columns into a cigarette,

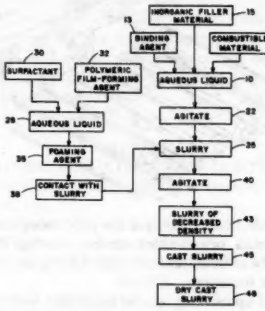
whereby a cigarette of acceptable overall resistance to draw and desired "tar" delivery can be attained.

5,007,440

PROCESS FOR PROVIDING SMOKABLE MATERIAL

Amy L. Robinson, Winston-Salem, and Chandra K. Banerjee, Pfafftown, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Nov. 14, 1989, Ser. No. 436,409
Int. Cl.[5] A24D *1/18*
U.S. Cl. 131—369 22 Claims



1. A process for providing a smokable material, the process comprising the steps of:

(a) providing a slurry of combustible material within an aqueous liquid,

(b) contacting the slurry with a foaming agent which includes an intimate mixture of surfactant and polymeric film-forming agent,

(c) subjecting the slurry and foaming agent to conditions sufficient to provide a slurry of decreased density, and

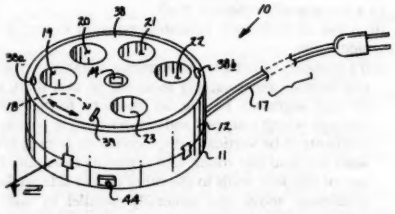
(d) forming the slurry into a predetermined shape.

5,007,441

ELECTRIC NAIL POLISH REMOVER

Michael D. Goldstein, P.O. Box 391, Gladwyne, Pa. 19035

Filed Dec. 29, 1989, Ser. No. 459,250
Int. Cl.[5] A45D *29/05*
U.S. Cl. 132—73.6 7 Claims



1. A fingernail polish removal apparatus comprising,

a lower housing mounted overlying an upper housing, and

motor means selectively actuatable mounted within the lower housing medially thereof and including a rotatable shaft projecting into the upper housing from the lower housing, and

a series of five fingernail positions formed within the upper housing, and

elongate cleaning means directed surroundingly about each position in operative association with the shaft for contact and cleaning of a fingernail of an associated finger directed into each position, and

wherein the five fingernail positions defined by four finger positions and one thumb position, and a lid is removably mounted to the upper end of the upper housing including an individual opening coaxially aligned with each finger position and thumb position, and

wherein the upper and lower housing are of circular configuration and coaxially aligned relative to one another, and

wherein the four finger positions are positioned in a semi-circular array within a semi-cylindrical portion of the upper housing with the thumb position oriented through a diameter bisecting the semi-circular array of the four finger positions, the thumb position including an actuator switch abutment at a lower terminal end of the thumb position for actuation of the motor means and the shaft, wherein the actuator switch is mounted within the lower housing underlying a flexible membrane mounted in a floor portion of the upper housing, and

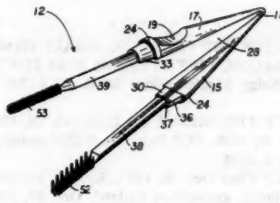
wherein the shaft includes a splined upper portion in engagement with a toothed inner face of the elongate cleaning means, and the elongate cleaning means is defined by an endless serpentine belt, the serpentine belt further including a sponge face opposed to the toothed face directed interiorly of each finger and thumb position.

5,007,442

DOUBLE BLOCKING MEMBERS SEALING A SINGLE OPENING MEANS

Suzy C. Hirzel, 933 Shellwood Way, Sacramento, Calif. 95831

Continuation of Ser. No. 142,027, Jan. 11, 1988, abandoned. This application Sep. 6, 1990, Ser. No. 404,110
Int. Cl.[5] A45D *40/26*
U.S. Cl. 132—218 5 Claims



1. In combination, a container having an open end and an applicator for mascara inserted in said opening, said applicator comprising a pair of elongated rods pivotally connected at one of their respective ends, and at their other ends having first and second cooperating applicator members, said rods upon pivoting between a first non-parallel position and a second substantially parallel position matingly engage said first and second applicator members for cooperating insertion into said opening of said container,

each of said rods including a first and second portion of a stopper member located substantially midway between the two ends of each rod, said first and second portions forming a stopper for said open end of the container by pivoting the rods to said second position,

said rods including a handle portion on said ends opposite said first and second applicator members.

5,007,443

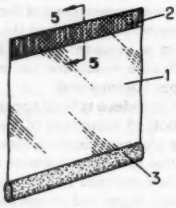
PROTECTIVE DEVICE FOR PROTECTING EARLIER TREATED HAIR

Jean C. Fulgoni, 2, rue Diderot, 92170, Vanves, France

Filed Apr. 28, 1988, Ser. No. 187,245
Claims priority, application France, May 12, 1987, 87 06644
Int. Cl.[5] A45D *19/18*
U.S. Cl. 132—270 4 Claims

1. A protective device for carrying out a permanent wave with a permanent wave product on a hair solely in the vicinity of the root thereof and to protect from the action of the permanent wave product the part of the hair which is not situated close to the root, said device including a flexible and liquid-

tight sheet (1), a reinforcement zone (2) extending along a first edge of said sheet and an arresting means (3) comprising a strip or pad of an absorbent material fixed to and extending along the edge of the sheet opposite said first edge, the length of the sheet being sufficient so that the arresting means and the reinforcement zone are situated substantially opposite each other when the protective device is in the functional position about



the hair to be protected; characterized in that the device further comprises fixing means for temporarily and removably fixing the protective device to the hair prior to winding said device and the hair on a roller, said fixing means being provided on said reinforcement zone or forming said reinforcement zone, and wherein all or part of said fixing means are formed by a strip carrying hook shaped elements.

5,007,444

APPARATUS FOR FLUSHING SMALL-DIAMETER HYDRAULIC PIPE SYSTEMS AND THE LIKE

Göran Sundholm, Magistervägen 34 B, SF-02700 Grankulla, Finland

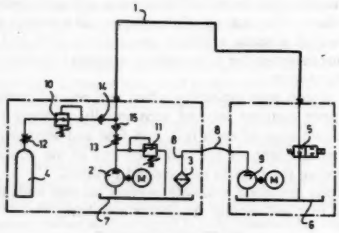
PCT No. PCT/FI87/00138, § 371 Date Feb. 28, 1989, § 102(e) Date Feb. 28, 1989, PCT Pub. No. WO88/03065, PCT Pub. Date May 5, 1988

PCT Filed Oct. 20, 1987, Ser. No. 326,542

Claims priority, application Finland, Oct. 23, 1986, 864289; Jan. 12, 1987, 870102

Int. Cl.[5] B08B *3/10*

U.S. Cl. 134—102 **8 Claims**



1. An apparatus for flushing at least a portion of a hydraulic pipe system, comprising a hydraulic pump means for flushing a liquid through the pipe system, and filter means together forming a flushing circuit comprising:

means for coupling a flushing circuit to a pipe system;

means for feeding a gas into the flushing liquid arranged in combination with the hydraulic pump means, and

the flushing circuit including valve means arranged to at first be closed when the pipe system has been filled with flushing liquid and gas, means for compressing the gas entrained in the pipe system, and said valve means thereafter being opened for expanding the compressed gas, in order to create a forceful flushing pulse through the pipe system.

5,007,445

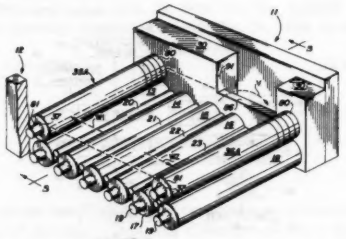
DYNAMIC FLOOD CONVEYOR WITH WEIR

Don P. Pender, Tempe, Ariz., assignor to Advanced Systems Incorporated, Phoenix, Ariz.

Filed Feb. 26, 1990, Ser. No. 485,167

Int. Cl.[5] B08B *3/04*

U.S. Cl. 134—122 R **3 Claims**



1. A dynamic flood conveyor for processing the upper surface of a circuit board substrate by moving the substrate through a body of fluid, said substrate having an upper surface, said conveyor including

(a) a pair of upstanding spaced apart side walls;

(b) generally horizontally oriented adjacent parallel support rollers for supporting and transporting said circuit board substrate, said support rollers

(i) including at least first and second end rollers,

(ii) each spanning the space between said side walls,

(iii) each having first and second ends each rotatably mounted in one of said walls, and

(iv) each having a cylindrical outer surface spanning the space between said side walls, each of the uppermost portions of said cylindrical surfaces of said rollers generally lying in and defining a common generally horizontal imaginary plane;

(c) means for rotating each of said support rollers in a common direction;

(d) fluid containment means extending above said horizontal plane and spanning the space between said side walls;

(e) an upper fluid containment roller spaced apart from said fluid containment means, spanning the space between said side walls, positioned above and generally parallel to said end roller, and including

(i) a horizontally oriented shaft,

(ii) a pair of ends each rotatably mounted in one of said side walls,

(iii) a plurality of cylindrical segments slidably contacting one another and rotatably mounted on said shaft, each of said segments having an aperture formed therethrough which is shaped and dimensioned to permit said segments to be vertically displaced with respect to said shaft and said end roller, said segments extending from one of said side walls to the other of said side walls and positioned above and generally parallel to said end roller and continuously contacting at least one of a second contact pair, said second contact pair comprising

said cylindrical outer surface of said end roller, and

the upper surface of said circuit board substrate passing between said fluid containment roller and said end roller,

selected ones of said segments remaining in contact with said end roller simultaneously with the remaining others of said segments being upwardly displaced with respect to said selected ones of said segments on contacting the upper surface of said circuit board substrate passing between said fluid containment roller and said end roller while moving toward said fluid containment means;

(f) a reservoir of fluid in said flood conveyor, said fluid

reservoir contacting said fluid containment roller and fluid containment means and generally extending

(i) above said support rollers,

(ii) between and contacting said fluid containment roller and fluid containment means, and

(iii) above said imaginary plane,

(g) means for injecting fluid into said reservoir;

said fluid containment roller and fluid containment means acting as dams to retain fluid in said reservoir; and,

said upward displacement of said remaining others of said selected ones of said segments of said fluid containment roller minimizing the fluid escaping from said reservoir over said end roller when said circuit board substrate passes between said fluid containment roller and said end roller into said reservoir.

5,007,446

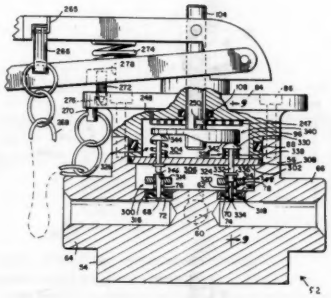
TEMPERATURE ACTUATED FLOW CONTROL DEVICE

Lee A. Grove, Elkhart, Ind., assignor to Remote Controls, Inc., Mishawaka, Ind.

Continuation-in-part of Ser. No. 427,255, Oct. 25, 1989, Pat. No. 4,947,886, Continuation-in-part of Ser. No. 341,474, Apr. 21, 1989, Pat. No. 4,884,595. This application Jun. 1, 1990, Ser. No. 532,064

Int. Cl.[5] **F16K** *11/18, 31/64;* **F16L** *55/14*

U.S. Cl. 137—72 **31 Claims**



15. A flow control device, comprising:

a valve having a valve body with a fluid-holding chamber therein;

inlet means opening into the chamber for supplying a fluid flow into the chamber under a positive pressure;

outlet means opening into the chamber and having an outlet opening in the body;

a collapsible tubing having one end sealingly attached to the outlet opening and an opposite end extending into the chamber, the opposite end having an inlet;

a piston moveably mounted in the chamber in spaced relation to the inlet of the collapsible tubing for insertion into and withdrawal from the inlet;

a shaft having a cam mounted thereon having a first position where it biases the piston into the inlet of the collapsible tubing to block fluid flow from the chamber through the outlet means wherein insertion of the piston into the collapsible tubing causes a pressure decrease in the collapsible tubing downstream of the inlet wherein the fluid pressure in the fluid chamber causes a portion of the collapsible tubing downstream of its inlet to collapse around the piston, the collapse of the collapsible tubing around the piston cooperating in conjunction with the piston to block fluid flow from the chamber through the outlet means, the cam having a second position where it permits the piston to be biased out of the inlet of the collapsible tubing by bias means for biasing the piton out of the inlet to unblock fluid flow from the chamber through the outlet means;

second bias means for rotating the shaft from a first position to a second position to rotate the cam from its first position to its second position;

a temperature sensitive link mechanically coupling the shaft to the body to prevent the shaft from rotating when the temperature to which the flow control device is exposed is less than a predetermined temperature, the link decoupling the shaft and body when the temperature to which the flow control device is exposed reaches or exceeds the predetermined temperature which permits the shaft to be rotated by the second biasing means to its second position to pen the valve by permitting the collapsible tubing to uncollapse.

5,007,447

PNEUMATIC FEED SAFETY APPARATUS WITH RE-SETTING CONTROL

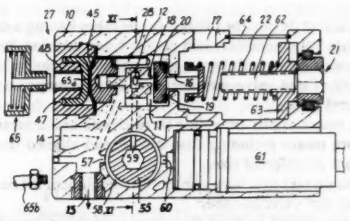
Gérard Penitot, Paris; Marcel Cartigny, Neuilly-sur-Marne; Joël Roynard, Villeneuve-le-Comte; Bruno Valdenaire, Le Raincy; Marc Astier, Montrouge; Bernard Mery, Cachan, and Michael Wendling, Strasbourg, all of France, assignors to Quiet S.A., Chelles, France

Filed Feb. 12, 1990, Ser. No. 478,693

Claims priority, application France, Feb. 13, 1989, 89 01845

Int. Cl.[5] **F16K** *17/02, 37/00*

U.S. Cl. 137—102 **13 Claims**



1. An apparatus with a re-setting action, for producing a signal for triggering off at least one safety measure on an installation including at least a pneumatic feed in the event of a drop in the pressure of said pneumatic feed, comprising:

a body having a first orifice for connection to the pneumatic feed;

an internal chamber in the body;

a first duct in the body communicating the first orifice with the chamber;

a second duct communicating with said chamber;

means connected to the chamber for establishing a signal in a first state when the pressure, of the feed is higher than a threshold and in a second state when said pressure falls below said threshold, the signal in its first state being the presence of a pressure in the second duct and in its second state being the absence of pressure in the second duct, the means for establishing the signal comprising: a first seat through which the first duct opens into the chamber; a third duct communicating the chamber with an exhaust orifice of the body; a second seat through which the third duct opens into the chamber, the second seat being of larger diameter than the first seat; a valve member movable in the chamber between a first position in which it is applied against the first seat and a second position in which it is applied against the second seat; and a resilient return member operatively disposed between the body and the valve member to urge the valve member towards its first position under a force of an intensity corresponding to said threshold;

means for regulating the value of said threshold; and

a voluntary re-setting means comprising an actuating mem-

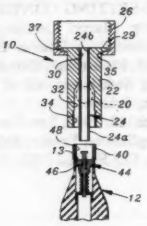
ber which is accessible from the exterior of the body, and a thrust means disposed in opposite operative relationship to the resilient return member with respect to the valve member between the latter and the actuating member, the thrust means being displaceable in said body with a movement of an amplitude which is at least equal to the value of the displacement of the valve member when it moves from one of the seats to the other.

5,007,448

FILLING DEVICE FOR LIQUID FILLED TIRES

Harvey A. Olinger, Huntington Beach, Calif., assignor to Advanced Commercial Products, Inc., Santa Ana, Calif.

Filed Feb. 9, 1990, Ser. No. 477,757
Int. Cl.[5] F16K *24/00*; B65B *31/04*
U.S. Cl. 137—223 **14 Claims**



1. A filling device for filling tires or tubes having a conventional tire valve member, said device being adapted for filling said tires or tubes with liquid, after removal of the valve stem assembly of said valve member, said device comprising:

a barrel means;

bore means axially extending through said barrel means, said bore means including first and second aligned bore portions of different sizes;

means on said first bore portion for attachment tot he end of said tire valve member;

air vent means in fluid flow communication between the interior of said first bore portion and the outer atmosphere;

tube means in fluid flow communication with said second bore portion and having an end extending beyond the terminal end of said first bore portion a distance sufficient for cooperative engagement with said tire valve member when said filling device is attached to said tire valve member;

fitting means coupled to the other end of said barrel means for attachment to pressurized source of liquid, the parts of said filling device being configured, dimensioned and arranged that pressurized liquid flowing through said fitting means flows through said tube means into the tire, while air escaping from the tire enters into said first bore portion for discharge through said vent means.

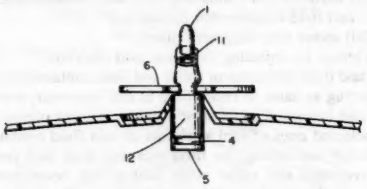
5,007,449

DEFLATOR

Anthony J. Marrone, II, 91-413B, Eva Beach Rd., Eva Beach, Hi. 96706

Filed Jan. 2, 1990, Ser. No. 459,685
Int. Cl.[5] F16K *15/18, 31/44*
U.S. Cl. 137—223 **4 Claims**

1. A deflating tool, for use in conjunction with cut-check valves, being constructed of suitable rigid material having a slot in its body of suitable length and width which tapers from the perimeter of the tool at a suitable fixed rate so as to accommodate the stem of the cut-check valve at its widest part and squeeze the valve stem, without damaging it, as the slot is moved passed the stem, so that the stem deforms a sufficient amount to open the cut-check valve, said surface of the deflating tool slot being smoothly finished so as not to damage the valve stem.

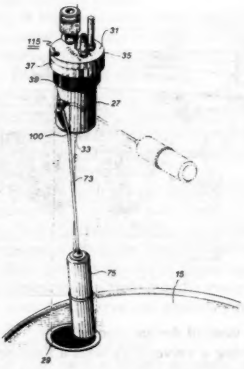


5,007,450

ADD-ON LIQUID OVERFLOW SHUT-OFF VALVE FOR TANK

Franklyn P. Babb, and Matthew T. Babb, both of 1666 S. Santa Fe, Vista, Calif. 92084

Continuation-in-part of Ser. No. 538,524, Jun. 15, 1990, abandoned. This application Sep. 10, 1990, Ser. No. 579,539
Int. Cl.[5] F16K *43/00, 31/32, 33/00*
U.S. Cl. 137—315 **24 Claims**



1. An add-on liquid overflow shut-off valve for a tank comprising:

(a) A valve body, a moveable float spaced-apart therefrom and a connecting arm extending therebetween, all adapted for insertion and removal as one integral, portable unit through a standard tank lid opening for suspension below said opening so that said float is responsive to the liquid level in the tank, said valve body including a flanged portion extending exterior of the tank lid opening to receive connections from a pneumatic source and to a pneumatic driven pump;

(b) pneumatic ingress and egress means formed in said top flanged portion of said valve body in spaced-apart relation for passing only gas through said valve;

(c) spaced-apart first and second pneumatic passageways formed interior of said valve body extending respectively from said ingress means and said egress means;

(d) a third pneumatic passageway formed interior of said body interconnecting said first and second passageways to allow a flow of gas therethrough;

(e) a shaft pivotally received in said body, interrupting said third pneumatic passageway, having a fourth pneumatic passageway formed therethrough for pneumatic alignment with said third pneumatic passageway when the liquid is below a predetermined level in the tank, said shaft

having one end thereof extending outside said valve body for connection to said arm;

(f) said connecting arm causing rotation of said shaft as a function of said float movement on top of the liquid in the tank, to align said fourth pneumatic passageway with said third pneumatic passageway when the liquid is below the predetermined level, to allow gas to flow from said ingress means through said first, second, third, and fourth pneumatic passageways to said egress means to drive the pump and continue to deliver liquid into the tank, and then to rotate into a position wherein said fourth pneumatic passageway rotates out of alignment with said third pneumatic passageway shutting off the gas flow to the pump when the liquid reaches the predetermined level, said valve body, float and connecting arm able to be withdrawn as a unit from the filled tank through the tank opening for immediate insertion into another tank for subsequent use; and,

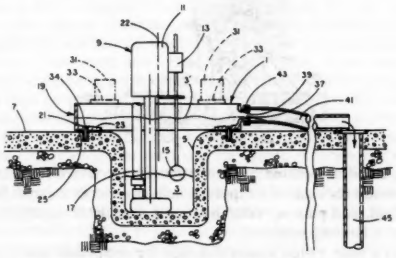
(g) means for connecting said valve body to an electrical ground.

5,007,451

SUMP PROTECTION SYSTEM

Andrew Bralich, 2485 W. 9th St., Oshkosh, Wis. 54904

Filed May 30, 1989, Ser. No. 358,132
Int. Cl.[5] E02D *19/06*; F04B *49/04*
U.S. Cl. 137—362 **2 Claims**



1. A sump protection system comprising:

a. an uncovered retainer comprising:

i. a tube having a central axis and a predetermined diameter and a predetermined height, the diameter being approximately nine times greater than the height, the tube having an exposed top end and a lower end;

ii. an annular flange extending radially from the tube lower end, the flange having an inner diameter sufficient to surround a sump in a building floor and being detached therefrom, the flange having upper and bottom surfaces; and

iii. a spout formed in the tube;

b. seal means bonded to the flange bottom surface and contactable with the building floor for cooperating with the tube and flange to confine any water rising above the sump to be confined within the retainer; and

c. hose means clamped to the spout for directing any water within the retainer to a selected location therefrom,

so that the building portions in the vicinity of the sump are protected against any water overflowing from the sump.

5,007,452

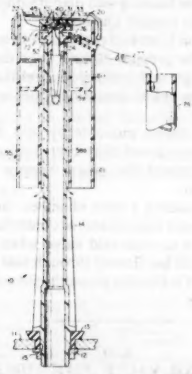
BOWL FILL FOR A TANK VALVE

Bruce A. Antunez, 1143 Indian Springs, Glendora, Calif. 91740

Filed Mar. 22, 1989, Ser. No. 326,916
Int. Cl.[5] F16K *31/18, 33/00*
U.S. Cl. 137—441 **5 Claims**

1. In combination with a tank valve for refilling a toilet tank and simultaneously supplying water to a toilet bowl, said tank valve having a riser, a valve mounted to said riser said valve having a body, a valving chamber in the body, an inlet valve entering said valving chamber from the riser, and a downwardly directed outlet port from said valving chamber, the improvement comprising:

a cuff surrounding said riser, said cuff having a bottom with an aperture to pass the riser, and a peripheral sidewall extending upwardly from the bottom with an upper edge spaced by a gap from the body through which water



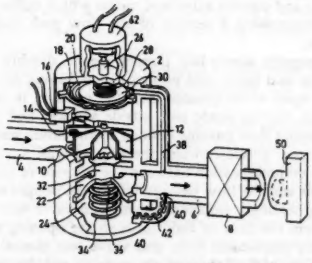
discharged form the outlet port into said cuff flows into the toilet tank, a fill port through said cuff for connection to a hose through which water from the cuff flows to the toilet bowl simultaneously with flow through the gap to the toilet tank, said sidewall selectively being so proportioned and arranged that the flow through the gap and through the fill port are suitably proportioned for both purposes.

5,007,453

FLUID FLOW CONTROL DEVICE

Yehuda Berkowitz; Gavriel M. Hi, both of Edmond Fleg str. 48, and Yehuda Mizrahi, Stella Maris Road 30, all of Haifa, Israel

Filed Apr. 2, 1990, Ser. No. 502,892
Claims priority, application Israel, Apr. 19, 1989, 90041
Int. Cl.[5] F16K *17/34*
U.S. Cl. 137—458 **16 Claims**



1. A flow control device insertable into a pressurized fluid line upstream of a fluid utilization device, comprising:

a housing containing an inlet port connectable to the fluid line, and an outlet port connectable to the utilization device;

a normally-open valve connected to the outlet port;

an electrical control system for closing said valve upon the occurrence of a predetermined condition;

a power supply for supplying electrical power to said electrical control system;

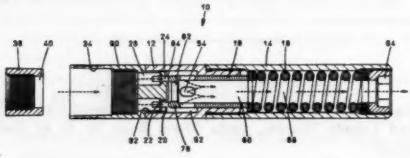
an electrical switch which is normally open to disconnect said power supply from the electrical control system;
and a flow sensor for sensing the flow of fluid through said outlet port and effective, when significant fluid flow is sensed, to close said electrical switch and thereby to connect said power supply to the electrical control system; said flow sensor comprising:
a displaceable diaphragm in said housing and defining a control chamber with a portion of the housing;
biassing means for biassing said diaphragm in the direction of expanding said control chamber;
a fluid connection from said outlet port to said control chamber to lower the pressure therein upon the significant flow of fluid through said outlet port, and thereby to displace said diaphragm in the direction of contracting said control chamber;
and a switch actuator movable by said diaphragm, when moved to contract said chamber, to close said switch and thereby to connect the power supply to the electrical control system;
said housing including a main chamber, and a liquid metering device in said main chamber controlling said electrical control system to close said valve when a predetermined quantity of fluid has flowed through said main chamber or when the fluid is flowing through said main chamber at an excessive rate.

5,007,454

FLUID CONTROL VALVE WITH TUBULAR POPPET

Leighton Lee, II, Guilford, Conn., assignor to The Lee Company, Westbrook, Conn.

Filed Sep. 21, 1989, Ser. No. 410,653
Int. Cl.[5] F16K *15/08*
U.S. Cl. 137—508 **20 Claims**



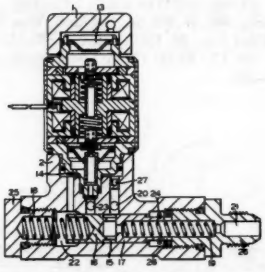
1. A fluid control valve comprising;
(A) housing means for forming a generally axially extending body defining an axially extending flow path;
(B) dual concentric valve seat means comprising opposing inside and outside valve seat means which define an opening comprising a section of the flow path through the valve;
(C) generally sleeve-like poppet means slidably received within said body, said poppet means having an upstream end equal to or greater than the opening in transverse aspect, having inside and outside surfaces and an axially extending flow passage defined by the inside surface of at least one orifice through the poppet wall for providing fluid communication between the exterior of said poppet means and the flow passage within the poppet means and being sealingly engageable with said valve seat means to prevent the flow of fluid through the opening and being axially displacable from said valve seat means to permit the flow of fluid through the opening and the fluid media passes through either the gap between the inside surface of the upstream end of said poppet means and the inside valve seat means or the gap between the outside surface of the upstream end of said poppet means and the outside valve seat means and thence into the poppet flow passage; and
(D) biasing means for biasing said poppet means against said valve seat means in a first upstream axial direction so that said poppet means sealingly engages said valve seat means unless and until the force exerted against said poppet by the pressure of the fluid media in the second downstream axial direction exceeds the opposing force exerted against the poppet by the biasing means axially displacing said poppet from said valve seat means in said second axial direction and allowing flow through the valve.

5,007,455

PILOT-OPERATED HYDRAULIC ANTILOCK MODULATOR

Michael J. Hawker, Lincoln, United Kingdom, assignor to Clayton Dewandre Co., Ltd., Lincoln, United Kingdom

Filed Feb. 15, 1989, Ser. No. 311,319
Claims priority, application United Kingdom, Feb. 15, 1988, 8803434
Int. Cl.[5] F15B *13/043*
U.S. Cl. 137—596.16 **43 Claims**



1. A pilot-operated hydraulic modulator which includes a provision for each of a supply, a delivery and an exhaust flow of fluid, said pilot-operated hydraulic modulator comprising:
(a) a housing member;
(b) a main piston means disposed for reciprocal movement within said housing member;
(c) a means for producing a pressure balance across said main piston means;
(d) an auxiliary piston means disposed for reciprocal movement within said housing member, said auxiliary piston means moves in response to a predetermined movement of said main piston means;
(e) an inlet valve means operable in response to said reciprocal movement of one of said main piston means and said auxiliary piston means for controlling fluid communication between a supply and a delivery fluid communication port;
(f) an exhaust valve means operable in response to said reciprocal movement by an opposite one of said main piston means and said auxiliary piston means for controlling fluid communication between said delivery and an exhaust fluid communication port;
(g) biasing means engageable with said auxiliary piston means for urging said auxiliary piston means in a predetermined direction;
(h) means for supplying a pilot signal pressure to said main piston means, said main piston means moving in response to said pilot signal pressure and during at least a portion of its movement said main piston means controls movement of said auxiliary piston means away from a stopped position toward which said auxiliary piston means is biased; and
(i) a biasing means engageable with said main piston means for urging said main piston means in a predetermined direction toward said auxiliary piston means.

5,007,456

CLOSING ARRANGEMENT FOR DUCTS HAVING LARGE CROSS-SECTIONAL AREAS, PARTICULARLY FLUE GAS DUCTS

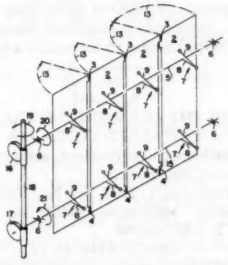
Volker von Erichsen, Recklinghausen, Fed. Rep. of Germany, assignor to Stober & Morlock Wärmekraft Gesellschaft mbH

Filed Oct. 20, 1989, Ser. No. 424,596

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1988, 3836861

Int. Cl.[5] F16K *11/16*

U.S. Cl. 137—601 3 Claims



1. A closing arrangement for ducts defined by walls and having large cross-sectional areas, particularly flue gas ducts for power plants, the arrangement comprising at least two flaps which are mounted on at least one flap shaft and are arranged in one of the ducts and within the duct walls, lever arrangements comprising crank arms and tightening arms for swinging the flaps between an open position and a closed position being connected to the flaps, at least one drive shaft being connected to the lever arrangements, wherein the drive shaft extends transversely of the at least one flap shaft, wherein the flaps each have a central longitudinal axis, the flap shaft being arranged centrally in the longitudinal axis of each flap and the tightening arm of each lever arrangement acting on the flap eccentrically relative to the longitudinal axis, the arrangement further comprising a joint lever having first and second ends, the first end of the joint lever being rigidly connected to the centrally located longitudinal axis of each flap, the joint lever being arranged at an angle relative to the flap, wherein the second end of the joint lever is connected to the tightening arm in an articulated manner.

5,007,457

PNEUMATIC OSCILLATORS

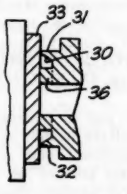
Norman S. Jones, Stanbridge, England, assignor to Instruments and Movements Limited, London, England

Continuation of Ser. No. 352,962, May 17, 1990, abandoned. This application Jul. 20, 1990, Ser. No. 556,303

Claims priority, application United Kingdom, May 20, 1988, 8812004

Int. Cl.[5] F16K *1/32*

U.S. Cl. 137—624.14 7 Claims



1. A pneumatic oscillator comprising a reciprocable piston or equivalent operating a poppet valve arrangement including a port to control a gas flow path from a gas source to a gas outlet, said poppet valve arrangement biassed to the path-closing condition with feedback of gas pressure at said gas outlet to supplement the bias in opposition to source pressure at the poppet valve, said poppet valve arrangement having a sealing lip providing for sharp definition of a line of contact on a resilient facing to define a switching control area, and stop means adapted to limit penetration of the facing by the lip in the flow path-closing condition, said stop means being positioned to engage said resilient facing downstream of said switching control area.

5,007,458

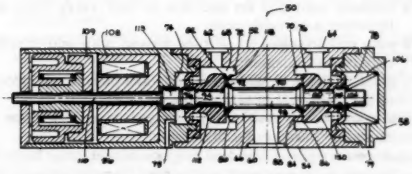
POPPET DIAPHRAGM VALVE

Jerald J. Marcus, Otsego, and John F. Berninger, Portage, both of Mich., assignors to Parker Hannifin Corporation, Cleveland, Ohio

Filed Apr. 23, 1990, Ser. No. 514,913

Int. Cl.[5] F16K *31/06, 11/02*

U.S. Cl. 137—625.5 13 Claims



1. A fluid valve for directing fluid flow therethrough, comprising:

a valve body;

said body including:

a first chamber;

first inlet means for introducing fluid into said first chamber;

a second chamber, said second chamber having a first side and an opposed second side;

first outlet means for delivering fluid from said first side of said second chamber;

first fluid passage means extending between said first and second chambers, said first fluid passage means including a first opening into said first side of said second chamber;

a stem mounted for axial movement on said valve body, said stem movable between a first position and a second position, said stem including a first reduced portion;

movement means for selectively moving said stem between said first and second positions;

a first poppet diaphragm mounted on said stem for movement therewith in said second chamber, said poppet diaphragm including:

a first resilient body portion, said first body portion including a first hole therethrough, said first reduced portion of said stem extending through said first hole, said first body portion adjacent said stem abutting said first reduced portion whereby said first body portion is fixed on said stem; said first body portion further having a first face adjacent said first opening, said first face adapted for blocking said first opening when said stem is in the first position, and said first face disposed of said first opening when said stem is in the second position;

a flexible first web portion, said web portion extending outward of said first body portion to first peripheral portions, said first peripheral portions of said web engaging said valve body, said first poppet diaphragm maintaining said first side of said second chamber in fluid tight relation with said first opening and said first outlet means;

whereby movement of said stem between said first and

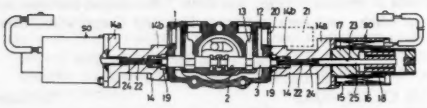
second positions selectively places said first inlet and first outlet in fluid communication.

5,007,459

HYDRAULIC CONTROL SYSTEM

Masaharu Asaoka, Saitama, Japan, assignor to Kayaba Industry Co. Ltd., Japan

Filed May 29, 1990, Ser. No. 529,923
Claims priority, application Japan, May 30, 1989, 1-62764[U]
Int. Cl.[5] F15B *13/044*
U.S. Cl. 137—625.65 3 Claims



1. A hydraulic control system comprising:
a valve body;
a solenoid provided on one side of said valve body and including a movable core;
a push rod arranged so as to be moved with said movable core of said solenoid;
a spool arranged in said valve body and positioned opposite to the distal end of said push rod;
said spool being positionally changed depending upon an excitation current of said solenoid;
an accessory port formed on one side of said valve body for mounting an accessory component therethrough on said valve body;
a cap member detachably interposedly arranged between said valve body and said solenoid, said cap member abutting said one side of said valve body and having a diameter sufficiently smaller than said valve body so as to not obstruct said accessory port; and
a push bar insertedly arranged in said cap member so as to permit said push rod to be contacted at the distal end thereof through said push bar with said spool.

5,007,460

ADJUSTABLE NOZZLE DAM ASSEMBLY AND METHOD OF INSTALLING SAME

Louis J. Zezza, Brookfield, and Frank Fiorelli, Danbury, both of Conn., assignors to Nuclear Energy Services, Inc., Danbury, Conn.

Filed Apr. 3, 1989, Ser. No. 331,794
Int. Cl.[5] F16L *55/12*
U.S. Cl. 138—89 15 Claims

1. In a nozzle dam assembly for use in nozzles having nominally varying longitudinal profiles flaring to circular wall openings about which are fixed flange rings of nominally varying eccentricity relative to such openings, said assembly including a circular dam adapted to face into and seal the associated nozzle adjacent its opening and a support frame abutting the backside of the dam and adapted to be removably affixed across the associated ring, the improvement which comprises adjustment means for selectively locating said dam at its optimum sealing position within the nozzle notwithstanding the particular nozzle profile and the particular eccentricity of the ring relative to the opening comprising
(a) adjustable hanger bars adapted to rest slideably on the ring while supporting the dam in selected depth positions along the nozzle axis,
(b) adjustable abutments on the frame restraining the dam against outward movement along the nozzle axis from the selected depth position determined by the hanger bars but permitting movement of the dam in a plane perpendicular to the nozzle axis,
(c) adjustable plates supporting the hanger bars and dam in selected vertical positions perpendicular to the nozzle axis, and
(d) pins adapted to be affixed to the ring and support the adjustable plates and bars and dam in selected horizontal positions perpendicular to the nozzle axis.

5,007,461

METHOD FOR THE CLEANING OF THE INTERIOR OF INSTALLED CONDUITS

Werner Naf, Richterswil, Switzerland, assignor to interTechno AG, Richterswil, Switzerland

Filed Jun. 7, 1988, Ser. No. 203,695
Claims priority, application Switzerland, Jul. 9, 1987, 2604/87; Feb. 2, 1988, 346/88
Int. Cl.[5] F16L *55/18*
U.S. Cl. 138—97 6 Claims

1. A method of repairing, cleaning and coating the inside of an installed conduit, comprising the steps of:
drying the inside of a conduit to be coated by flow-through of pre-dried compressed air,
flowing-through the inside of said conduit a mixture of compressed air and particles of an abrasive medium with a mean exterior diameter of >0.8 mm and a specific weight of >3.0 g cm^{-3} in an amount of >1.0 g m^{-3}, said mixture flowing through said conduit with a mean speed of >10 m s^{-1} to remove materials adhering to the inside wall of said conduit,
cleaning said conduit by flowing-through pre-dried and preheated compressed air until the outside temperature of the line is $>40°$ C. to remove any remaining materials which have been removed from the inside wall of said conduit, and
subsequently coating the inside of the conduit by means of blowing in and blowing around an adhesive resin by means of compressed air, said adhesive resin being a solvent-free, self-setting resin with at least 5% by weight of inorganic oxidic adhesives with a mean diameter of <0.08 mm.

5,007,462

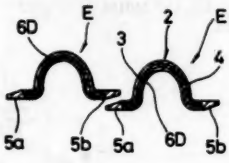
SYNTHETIC RESIN UNDERGROUND PIPE HAVING HIGH PRESSURE-WITHSTANDING CAPABILITY

Shiro Kanao, No. 9-18, Nanpeidai 4-chome, Takatsuki-shi, Osaka, Japan

Continuation of Ser. No. 227,413, Jun. 29, 1988, abandoned, which is a continuation of Ser. No. 127,543, Dec. 1, 1987, abandoned, which is a continuation of Ser. No. 831,893, Feb. 24, 1986, abandoned. This application May 9, 1990, Ser. No. 520,990
Claims priority, application Japan, Feb. 25, 1985, 60-26173[U]; Aug. 9, 1985, 60-23193; Aug. 9, 1985, 60-123191[U]; Aug. 9, 1985, 60-123192; Dec. 12, 1985, 60-191581[U]
Int. Cl.[5] F16L *11/11*
U.S. Cl. 138—154 7 Claims

1. A synthetic resin pipe for underground use, comprising;
an integral, pipe wall corrugation helically wound to form a pipe, said corrugation having an outwardly projecting portion and flange portions on opposing sides of said projecting portion, adjacent flange portions being connected together to form a pipe having a helical trough portion adjacent said projecting portion; and
a thin metal plate reinforcing member disposed within said

outwardly projecting portion of said helically disposed corrugation, said reinforcing member being made of one of steel and iron so as to increase both the internal and external pressure withstanding capabilities of said pipe, wherein said metal plate is embedded within synthetic resin such that the synthetic resin ; completely surrounds and covers the complete surface of said thin metal plate reinforcing member to prevent water condensation



thereon and rusting thereof during underground use of said pipe,

wherein said reinforcing member is generally U-shaped defining a bight, legs and free ends, and the legs open toward the interior of said pipe and said free ends project laterally in a longitudinal direction of said pipe into a portion of each of said flanged portions so as to be partially disposed within said trough portion along the entire length of said pipe.

5,007,463

WEFT CLAMPING SYSTEM FOR INSERTER RAPIER

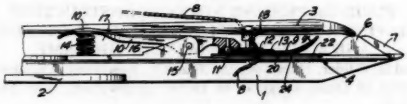
Luciano Corain; Gianni Maitan, both of Vicenza; Renato Perlini, Verona, and Mario Bacchetti, Padua, all of Italy, assignors to Nuovopignone-Industrie Meccaniche e Fonderia, S.p.A., Florence, Italy

Filed Aug. 3, 1989, Ser. No. 389,305

Claims priority, application Italy, Aug. 19, 1988, 21718 A/88

Int. Cl.[5] D03D *47/20*

U.S. Cl. 139—448 **4 Claims**



1. A Weft inserter rapier for shuttleless wearing looms comprising a weft clamping and retaining system, said weft clamping and retaining system having an elastic clamping foot which is urged by a spring-loaded lever with which said clamping foot is linked against a horizontal clamping plane provided along an external edge of a body of the rapier, in which said elastic clamping foot has a cross-section which has a substantially reverse-"U"-shape, said substantially reverse "U" shape cross-section defining side walls in which each of both of the side walls are spaced apart from each other and are urged against adjacent metal blades which are supported on said horizontal clamping plane through a support made of an elastomeric material.

5,007,464

ELECTROMAGNETIC WEFT BRAKE

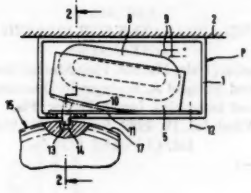
Joannes J. H. M. Gorris, Eindhoven, Netherlands, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 15, 1989, Ser. No. 352,168

Claims priority, application Switzerland, May 20, 1988, 01934/88

Int. Cl.[5] D03D *47/36*

U.S. Cl. 139—455 **17 Claims**



1. In combination,

a winding drum for a loom for receiving yarn windings thereon; and

an electromagnetic device for limiting delivery of yarn windings from said drum, said device having at least one pole piece having an abutment surface thereon; a winding for conducting an electrical current therethrough to generate an electromagnetic force in said pole piece; and a spring strip fixedly mounted at one end relative to said pole piece and having a free end portion extending in spaced opposed relation to said abutment surface, said free end portion of said spring strip being movable between an extended position spaced from said abutment surface to limit delivery of yarn windings from said drum and a retracted position against said abutment surface in dependence on said electromagnetic force to allow delivery of yarn windings from said drum, at least one of said abutment surface and said end portion of said spring strip being curved.

5,007,465

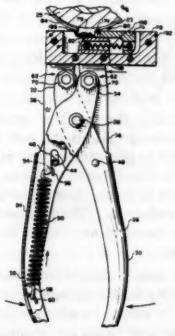
HAND OPERATED BAND BENDING TOOL

David W. Tonkiss, Glendale, Calif., assignor to Joslyn Corporation, Chicago, Ill.

Filed Dec. 6, 1989, Ser. No. 446,938

Int. Cl.[5] B21F *15/06*

U.S. Cl. 140—150 **19 Claims**



1. A band finishing tool for bending a free end of a band extending from one side of a buckle over the buckle, said buckle formed with a slot defining internal edges, comprising:

means for holding said internal edges of the buckle and

allowing said free end to be bent over the buckle and contact the band on the other side of the buckle; and

means for bending said free end over said buckle to be in contact with said band on said other side of the buckle.

5,007,466

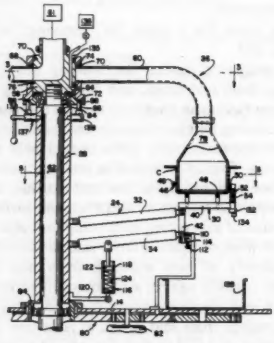
METHOD AND APPARATUS FOR FILLING ICE CREAM CONTAINERS

Martin J. Mueller, Palm Harbor, Fla.; Martin Mueller, Wonder Lake, Ill., and Michael A. Weingandt, Duneden, Fla., assignors to Osgood Industries, Inc., Oldsmar, Fla.

Filed Jul. 19, 1989, Ser. No. 381,858

Int. Cl.[5] B65B *3/34*

U.S. Cl. 141—1 24 Claims



1. An apparatus for filling containers with ice cream, said filling apparatus comprising:

means for continually moving at least one ice cream container along a predetermined path of travel;

means for filling said container with ice cream as the container continually moves along a segmented portion of its predetermined path of travel, said filling means comprising ice cream distribution means connected to a source of ice cream and defining an ice cream outlet, and conduit means movable relative to said ice cream outlet for delivering ice cream from said outlet to said container, said conduit means comprising at least one ice cream conduit having an inlet end which is moved into and out of fluid communication with said ice cream outlet, with ice cream passing through said conduit so long as the outlet end of the conduit and said ice cream outlet are joined in fluid communication relative to each other; and

means for controlling the speed of movement of said conduit means relative to said outlet and of said container as it moves relative to said outlet along at least said segmented portion of its travel thereby affecting the volume of ice cream filled into said container by increasing the speed of movement to reduce the filling of said container, and by decreasing the speed of movement to increase the filling of said container,

said controlling means comprising variable speed drive means for driving said container moving means and said conduit means in concert with each other relative to said ice cream outlet, and means for monitoring the quantity of ice cream with which said container is filled relative to a predetermined value, and for controlling the speed of said drive means to promote accuracy during filling of said containers.

5,007,467

METHOD AND APPARATUS FOR PRODUCING CATHODES FOR DRY-CELL BATTERIES, ESPECIALLY LITHIUM BATTERIES

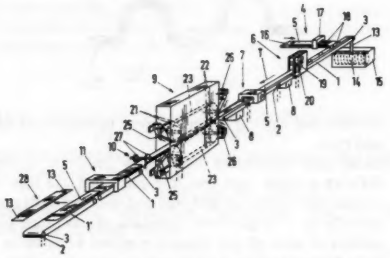
Josef Nelles, Meschede, Fed. Rep. of Germany, assignor to Accumulatorenwerke Hoppecke Carl Zoellner & Sohn GmbH & Co. KG, Brilon, Fed. Rep. of Germany

Filed Sep. 26, 1989, Ser. No. 412,666

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1989, 3921288

Int. Cl.[5] H01M *4/72, 4/82*

U.S. Cl. 141—1.1 7 Claims



1. In a method of producing cathodes for dry-cell batteries, especially lithium batteries, including pasting a pasty cathode material on a metallic carrier material and subsequently compressing said cathode material therewith, and finally welding a current shunting to an end of said carrier material, the improvement comprising the steps of:

continuously unrolling a strip-like carrier material from a supply roll;

automatically feeding a dosed quantity of said pasty cathode material to said carrier material and subsequently pasting this cathode material onto said carrier material;

while continuously transporting said pasted carrier material further, automatically compressing same;

while still continuously transporting said pasted carrier material further, cutting same at a cut location to form predetermined cathode lengths;

finally automatically connecting said current shunting to said carrier material, with the further improvement of:

between said pasting and compressing steps, removing cathode material from said pasted carrier material, in conformity with the cathode length, in the vicinity of a given cut location to expose said carrier material to form a later contact location for said current shunting.

5,007,468

FLUID DISPENSING NOZZLE CONSTRUCTION HAVING A DIAPHRAGM SUBASSEMBLY THEREIN AND METHODS OF MAKING THE SAME

Paul R. Wilder, Hamilton, and James E. Kesterman, Cincinnati, both of Ohio, assignors to Dover Corporation, New York, N.Y.

Filed Nov. 19, 1987, Ser. No. 123,042

Int. Cl.[5] B65B *1/30*

U.S. Cl. 141—209 8 Claims

1. A fluid dispensing nozzle comprising

a main valve,

lever means for controlling said main valve, and

automatic shut off means for disposing said lever means in an "on" condition or an "off" condition,

said shut off means including

a diaphragm assembly comprising

a diaphragm having an upper and lower surface,

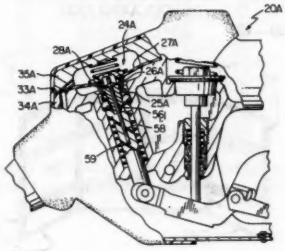
a pin and

means for mounting the diaphragm on the upper end of the pin comprising first and second clamping elements be-

tween which a central portion of the diaphragm is clamped,

characterized in that

the first and second clamping elements are telescoped to a



clamping position and have, respectively, cooperating snap fit connecting surfaces which are readily assembled to mount the diaphragm on the pin and which require destruction of at least one of the elements to remove the diaphragm from the pin.

5,007,469

PRESSING APPARATUS FOR A PROCESSING MACHINE

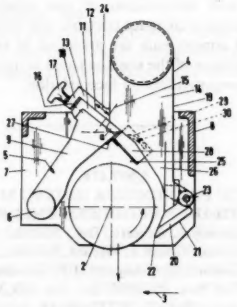
Heiner Englert, Lauda-Königshofen, and Bernhard Martin, Tauberbischofsheim, both of Fed. Rep. of Germany, assignors to Michael Weinig Aktiengesellschaft, Tauberbischofsheim, Fed. Rep. of Germany

Filed Oct. 6, 1989, Ser. No. 418,022

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1988, 8812623[U]

Int. Cl.[5] B27G *19/00*

U.S. Cl. 144—252 R **20 Claims**



1. In a pressing apparatus for a processing machine, including at least one adjustable pressing element that is provided for a workpiece which is to be processed and that is associated with a processing tool, the improvement comprising:

means for adjusting said pressing element relative to said processing tool at an angle to a direction of transport of said workpiece through said machine.

5,007,470

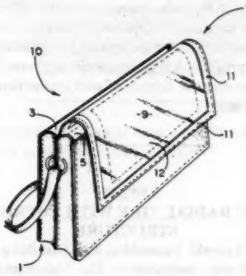
PURSE WITH REMINDER DEVICE

Carol A. Freeman, 16000 Pemberville Rd., Pemberville, Ohio 43450

Filed Apr. 27, 1990, Ser. No. 515,186

Int. Cl.[5] A45C *1/02, 15/02*

U.S. Cl. 150—114 **3 Claims**



1. An improved purse having a reminder device incorporated therewith comprising:

(a) a purse having at least one compartment with an access opening;

(b) a flap having means for attachment to said purse, such that said flap is moveable to a position in overlying relation to said access opening;

(c) said flap including:

(i) a transparent portion;

(ii) a backing portion; and

(iii) means to removably attach at least a portion of said transparent portion to said backing portion, said transparent portion and said backing portion forming a chamber viewable through said transparent portion when said flap is in said position;

(d) said chamber receiving a reminder message facing said transparent portion.

5,007,471

BEADS OF PNEUMATIC TIRES FOR VEHICLE WHEELS

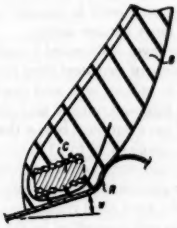
Luigi Maiocchi, Vernate fraz. Moncucco, Italy, assignor to Pirelli Coordinamento Pneumatici S.p.A., Italy

Filed Apr. 19, 1988, Ser. No. 183,639

Claims priority, application Italy, Apr. 28, 1987, 20293 A/87

Int. Cl.[5] B60C *15/04*

U.S. Cl. 152—540 **30 Claims**



1. A pneumatic tire for vehicle wheels comprising

two beads each reinforced with a circumferentially inextensible metal bead core ring package having a cross section generally in the shape of a parallelogram and having generally axially extending bases inclined at a predetermined angle with respect to the axis of rotation of the tire,

each said bead core comprising a plurality of radially superimposed coils of straps arranged side-by-side and radially offset with respect to one another,

each of said coils being straps having a cross section including two axially extending rectilinear and parallel opposite sides, their corresponding extremities at one side of such section being connected by a profile symmetric to the corresponding profile at the other side of the section with respect to a pre-established straight line "r" perpendicular to said pair of parallel sides,

the distance from said line "r" varying along the profile in such a way to include, along its length, at least one inversion in the trend of the values of said varying distance,

the side-by-side contact among said straps along their corresponding profiles determing their reciprocal radially offset position and the degree of said inclination of the parallelogram base.

5,007,472

PNEUMATIC RADIAL TIRE WITH IMPROVED BEAD STRUCTURE

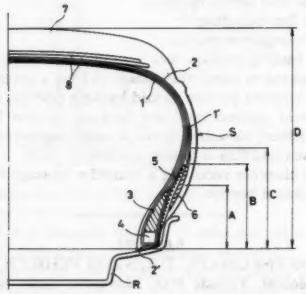
Tetsuya Kuze; Takashi Yamashita, and Toshihiko Suzuki, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1990, Ser. No. 514,641

Claims priority, application Japan, Apr. 26, 1989, 1-104533

Int. Cl.[5] B60C *15/06, 13/00, 15/00*

U.S. Cl. 152—546 **4 Claims**



1. Pneumatic radial tire characterized in that carcass layers of two-ply structure consisting of an inner carcass layer and an outer carcass layer is disposed;

said inner carcass layer is turned up from inside to outside around each bead core in such a manner as to wrap a bead filler therein;

a steel cord reinforcing layer is disposed outside said turnup portion of the inner carcass layer;

said outer carcass layer is disposed in such a manner that it covers the outside of said steel cord reinforcing layer and its tip extends to at least near said bead core;

a second filler is disposed outside said outer carcass layer;

said second filler has a hardness below that of said bead filler and within the range of 70 to 93 in terms of JIS hardness;

the cord angle of said steel cord reinforcing layer is from 15° to 30° to a tire circumferential direction; and

the height B of the steel cord reinforcing layer from a bead base to its upper end is specified by the following relationship, where; the height of said bead filler from said bead base to its upper is A, the height of said second filler from said bead base to its upper end C and a sectional height of said tire D:

$$0.2\,D < B < 0.5\,D \quad (1)$$

$$C > B > A \quad (2)$$

5,007,473

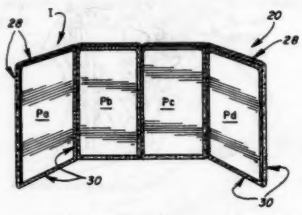
PORTABLE PARTITION SYSTEM

David P. Evensen, Wheeling, Ill., assignor to Nimlock Company, Niles, Ill.

Continuation of application Ser. No. 388,662 filed Aug. 2, 1989 abandoned. This application Aug. 20, 1990, Ser. No. 569,511

Int. Cl.[5] A47G *5/00*

U.S. Cl. 160—135 **4 Claims**



1. A portable partition system comprising only a plurality of planar, substantially inflexible, independent, lightweight, self-contained display panel components adapted to assume either an operative or inoperative mode, at least one panel component having a multilateral peripheral configuration including spaced substantially parallel front and back sides having corresponding upright peripheral segments thereof cooperating to form a recessed pocket extending substantially the full height of the panel component, and an elongate support member of one piece construction formed of substantially rigid material, said support member including an inner portion fixedly accommodated within the elongate pocket and substantially occupying same and an outer portion integral with said inner portion and protruding from an open side of said pocket, said outer portion having a substantially convex exterior surface on which is mounted a first attaching means, said outer portion and first attaching means extending substantially the full length and width of the pocket; a second panel component having an elongate exterior surface portion on which is mounted a second attaching means; when in an operative mode, said one panel component assuming an upright abutting relation with said second panel component whereby the first attaching means thereof is pressed against the second attaching means of the second panel component effecting a frictional interconnection therebetween, said abutting panel components while interconnected forming an upright partition and being adapted to assume any selected upright relative angular position, and when in an inoperative mode, said panel components being disconnected and independent of one another and being adapted to assume a compact portable unit wherein the independent panel components are arranged in stacked relation with planar surfaces of the stacked panel components being in proximate, superposed face to face relation.

5,007,474

METHOD OF PROVIDING A GATING MEANS, AND PRODUCTS PRODUCED THEREBY

Ralph A. Langensiepen, Newark, Del.; Michael K. Aghajanian, Bel Air, Md., and Robert J. Wiener, Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Filed Nov. 10, 1988, Ser. No. 269,315

Int. Cl.[5] B22D *19/14*

U.S. Cl. 164—97 **43 Claims**

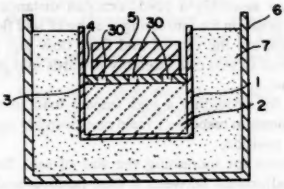
1. A method for making a metal matrix composite, comprising:

providing a substantially non-reactive filler;

providing a source of molten matrix metal;

interposing a gating means for controlling the flow of molten matrix metal into said filler, said gating means being

located between said source of molten matrix metal and said filler; and



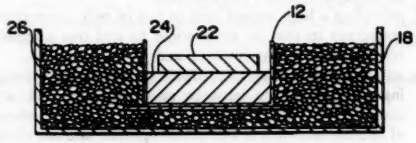
spontaneously infiltrating through said gating means at least a portion of the filler with molten matrix metal.

5,007,475

METHOD FOR FORMING METAL MATRIX COMPOSITE BODIES CONTAINING THREE-DIMENSIONALLY INTERCONNECTED CO-MATRICES AND PRODUCTS PRODUCED THEREBY

Christopher R. Kennedy, Newark, Del., and Michael K. Aghajanian, Bel Air, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Filed Nov. 10, 1988, Ser. No. 269,369
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—97 42 Claims



1. A method for making a metal matrix composite, comprising:

providing a substantially non-reactive three-dimensionally interconnected material;

providing at least one substantially non-reactive filler within at least a portion of said three-dimensionally interconnected material; and

spontaneously infiltrating molten matrix metal into at least a portion of the three-dimensionally interconnected material containing said substantially non-reactive filler.

5,007,476

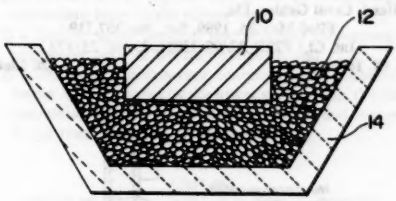
METHOD OF FORMING METAL MATRIX COMPOSITE BODIES BY UTILIZING A CRUSHED POLYCRYSTALLINE OXIDATION REACTION PRODUCT AS A FILLER, AND PRODUCTS PRODUCED THEREBY

Marc S. Newkirk, Newark, Del., and Michael K. Aghajanian, Bel Air, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Filed Nov. 10, 1988, Ser. No. 269,306
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—97 44 Claims

1. A method for making a metal matrix composite, comprising:

providing a permeable mass of filler comprising a comminuted oxidation reaction product; and



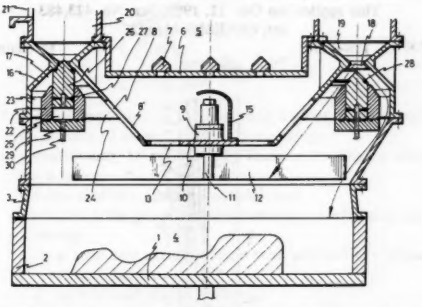
spontaneously infiltrating at least a portion of the permeable mass with a molten matrix metal.

5,007,477

AIR IMPACT SAND-BOX MOULDING MACHINE

Agustin A. Erana, Zorrostea, 4 Polígono Ind. Ali-Gobeo, 01010 Vitoria Alava, Spain

Filed Apr. 3, 1990, Ser. No. 503,611
Claims priority, application Spain, Apr. 6, 1989, 8901201
Int. Cl.[5] B22C *15/00*
U.S. Cl. 164—169 5 Claims



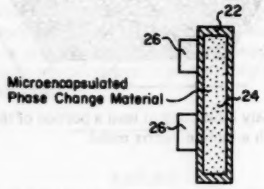
1. In an air impact sand-box moulding machine comprising a machine body, a sand-supplying hopper, a compacting chamber for compacting sand on a model positioned within a moulding box, a frame connected to said body and coupled to a mouth of said box wherein compacting is carried out by sudden pnuematic discharge from a boiler and wherein a valve means is provided including a plunger which is maintained in a closed position due to pressure of the boiler when blast air is not released, the improvement comprising a motor positioned in an upper area of said compacting chamber, said motor including a vertical shaft coaxial with a central axis of said sand-supplying hopper and rotary vanes attached to said shaft and positioned right above said frame which forms with said box said compacting chamber so that said vanes, upon rotation thereof, evenly spread out sand reaching said compacting chamber within said chamber, a metering hatch positioned inside said hopper above said motor, a support plate provided at a mouth of said hopper and supporting said motor, said support plate having apertures for permitting sand to fall therethrough into said compacting chamber, said support plate being provided with a protective plate integrally connected thereto to protect said motor from the sand falling into said compacting chamber upon opening of said metering hatch.

5,007,478

MICROENCAPSULATED PHASE CHANGE MATERIAL SLURRY HEAT SINKS

Subrata Sengupta, Coral Gables, Fla., assignor to University of Miami, Coral Gables, Fla.

Filed May 26, 1989, Ser. No. 357,719
Int. Cl.[5] F28D *20/00;* H01L *23/44, 23/473*
U.S. Cl. 165—10 20 Claims



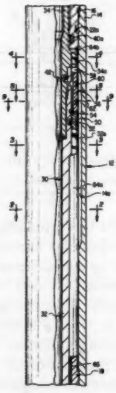
1. A heat sink device comprising:
a sealed container; and
a slurry of a microencapsulated phase change material and a fluid sealed within said container, said slurry being free flowing within said container.

5,007,479

HYDRAULIC UP-DOWN WELL JAR AND METHOD OF OPERATING SAME

Charles W. Pleasants, Carrollton, and Keith W. Scott, Farmersville, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Continuation of Ser. No. 269,996, Nov. 14, 1988, abandoned.
This application Oct. 11, 1989, Ser. No. 423,483
Int. Cl.[5] E21B *31/113*
U.S. Cl. 166—178 11 Claims



1. A hydraulic jar connected in a string of components for use in a wellbore, said jar comprising:
a. an inner mandrel assembly;
b. an outer housing assembly extending around said inner mandrel assembly in a coaxial relation thereto;
c. means respectively connecting said mandrel assembly and said housing assembly to two of said components;
d. a fluid chamber defined between said mandrel assembly and said housing assembly;
e. means for forming a restricted flow passage in said fluid chamber for dividing said chamber into two sections in fluid flow communication with said passage;
f. one of said assemblies being movable relative to the other from a cocked position to a jarring position to vary the volume of each chamber section and force the fluid to flow from one of said chamber sections, through said flow passage and to the other chamber section;
g. means responsive to said one assembly moving relative to the other assembly a predetermined distance from said cocked position for increasing the size of said flow passage and therefore the rate of said fluid flow and the rate of movement of said one assembly towards said jarring position; and
h. means for providing a high impact load to one of said components in response to said one assembly reaching said jarring position;
i. said means for increasing the size of said flow passage being adjustable between a first position and a second position without changing said connection between said assemblies and said components to permit said impact loading in opposite directions, respectively.

8. A method for operating a hydraulic jar connected in a string of components in a wellbore, said method comprising the steps of:
a. connecting a mandrel assembly and a housing assembly to two of said components, respectively;
b. forming a fluid chamber between said mandrel assembly and said housing assembly;
c. forming a restricted flow passage in said chamber to divide said chamber into two sections in fluid flow communication;
d. moving one of said assemblies relative to the other in one direction from a cocked position to a jarring position to vary the volume of each chamber section and force the fluid to flow through said flow passage from one of said chamber sections to the other;
e. increasing the size of said flow passage during said step of moving to increase the rate of said fluid flow and the rate of movement of said one assembly;
f. providing a high impact load to one of said components connected to said jar in response to said one assembly reaching said jarring position; and
g. adjusting the axial position of said groove without changing said connection between said assemblies and said components to permit said impact loading by movement of said one assembly in a direction opposite said one direction.

5,007,480

USE OF MANGANESE OXIDE IN DRILLING MUD AND OIL WELL CEMENT SLURRIES

Sverre Anderssen, Kristiansand, Norway, assignor to Elkem a/s, Norway

Filed Feb. 24, 1989, Ser. No. 315,466
Claims priority, application Norway, Mar. 8, 1988, 881017
Int. Cl.[5] C09K *7/04;* E21B *21/00, 33/14*
U.S. Cl. 166—292 28 Claims

1. An oil well cement slurry comprising cement, water, and a manganomanganic oxide particulate material, the material containing at least about 90% by weight of manganomanganic oxide, the material having a density between about 4.50 and about 4.75 g/cm^3 and a particle size of at least about 98% below about 10 μm.

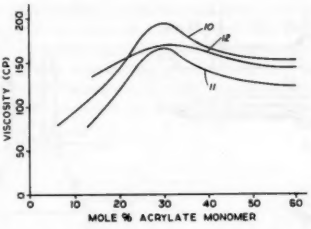
13. An oil well drilling mud comprising water and a weighted component, the weighted component having as an essential ingredient therein a manganomanganic oxide particulate material, the material containing at least about 90% by weight of manganomanganic oxide, the material having a density between about 4.50 and about 4.75 g/cm^3 and a particle size of at least about 98% below about 10 μm.

5,007,481

METHOD OF TREATING SUBTERRANEAN FORMATIONS USING A NON-DAMAGING FRACTURING FLUID

Dennis A. Williams, Houston; Roger L. Horton, Kingwood; John C. Newlove, Kingwood, and Robert E. Chumley, Kingwood, all of Tex., assignors to Exxon Chemical Patents, Inc., Linden, N.J.

Filed Feb. 2, 1990, Ser. No. 473,863
Int. Cl.[5] E21B *43/267*
U.S. Cl. 166—300 **12 Claims**



1. A process for fracturing a subterranean formation wherein an aqueous fracturing fluid is injected through a well and into the formation at a pressure and rate sufficient to form a fracture therein, the improvement wherein the aqueous fracturing fluid includes

(a) an effective amount of a copolymer of acrylamide and potassium acrylate crosslinked with a titanium or zirconium compound, the acrylamide comprises from 60 to 78 mole % of the copolymer and the potassium acrylate comprises 22 to 40 mole % of the copolymer and the concentration of the crosslinked copolymer being sufficient to provide the aqueous fracturing fluid with a viscosity of between 20 cp and 1,000 cp at 170 sec^{-} at a temperature of at least 200° F.; and

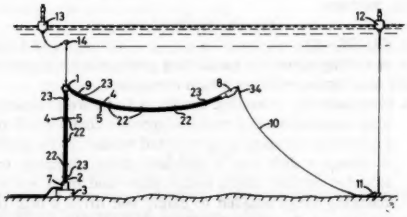
(b) an effective amount of an oxidative gel breaker capable of degrading the copolymer after about 2 hours.

5,007,482

OFFSHORE OIL PRODUCTION SYSTEM

Donald G. W. Forsyth; Robert W. Marshall, and Alan M. Thompson, all of Glaslow, Scotland, assignors to British Petroleum Co. p.l.c., London, England

Filed Mar. 9, 1990, Ser. No. 490,879
Claims priority, application United Kingdom, Mar. 9, 1989, 8905364
Int. Cl.[5] E21B *43/01*
U.S. Cl. 166—345 **17 Claims**



1. A swivel-less offshore oil production and mooring system comprising:

(a) a subsea base located on the sea bed associated with

(b) a subsea connector, adpated for connecting a subsea well head production system to a production riser,

(c) a subsea restraining buoy located at a position below the sea surface but above the sea bed,

(d) a buoyant riser endpiece adapted for a swivel-less connection to a loading vessel, located in its rest position at a position below the sea surface but above the sea bed, and anchorable to the sea bed,

(e) a flexible lower support line pivotally connecting the restraining buoy to the subsea base,

(f) a flexible upper support line pivotally connecting the restraining buoy to the riser endpiece, and

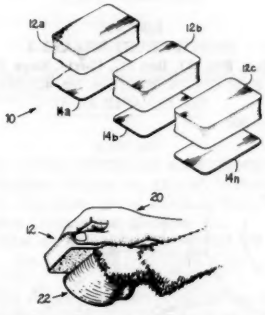
(g) a flexible production riser connected to the subsea connector and supported by the lower support line, the subsea restraining buoy and the upper support line and connected to the riser endpiece.

5,007,483

HOOF-BUFFING TOOL KIT FOR FARRIERS

Douglas K. McGuire, 39609 Luckiamute Rd., Philomath, Oreg. 97370

Filed Feb. 3, 1988, Ser. No. 151,764
Int. Cl.[5] A01L *11/00*
U.S. Cl. 168—48.1 **3 Claims**



2. A kit of buffing tools for imparting a gloss to the curved exterior surface of horses' hooves, comprising:

a. a multiplicity of substantially rectangular blocks, each block being:

1. fabricated of a resilient material; and

2. of a size to be gripped comfortably by a user's hand; and having

A. at least two principal faces with substantially planar surfaces hereon:

B. each of said planar surfaces:

I. having removably affixed thereto a different one of several grades of abrasive material;

b. said multiplicity of blocks collectively:

1. representing a progression, from coarser to finer, of said several grades of said abrasive material; and

2. imparting said gloss to said hooves when applied thereto, in order of said progression, in a buffing procedure.

5,007,484

METHOD AND APPARATUS FOR CHANGING CULTIVATOR PLOW BLADES

Greg N. Johanson, R.R. 2, Box 122, Elmore, Minn. 56027

Filed Oct. 30, 1989, Ser. No. 428,988
Int. Cl.[5] A01B *39/22*
U.S. Cl. 172—1 **11 Claims**

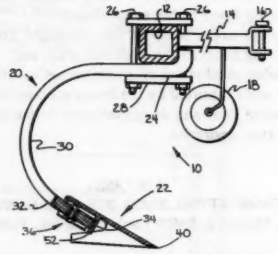
6. A plow blade comprising

(a) a longitudinal plate having a soil cutting leading edge;

(b) a downward projecting blade stop on an underside of the plate providing means for receiving a portion of the working forces from an abutment on a cultivator shank, said stop being spaced rearward of said leading edge;

(c) clip means on a back side of the plate separate from and

spaced rearwardly of said blade stop for slip fit upon the leading end of a cultivator shank; and



(d) downward facing lock means on said plate back side and spaced rearward of said blade stop, for engaging a blade lock on the cultivator shank and for locking the blade upon the shank.

5,007,485

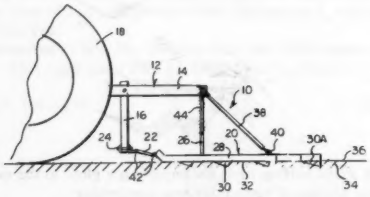
EARTH CRUST BREAKER

Robert J. Moss, Rte. #1, Box 8G, Hoxie, Kans. 67740

Filed Oct. 16, 1989, Ser. No. 421,666

Int. Cl.[5] A01B *31/00*

U.S. Cl. 172—500 **4 Claims**



1. An earth crust breaker drawn by a tool bar having a horizontal member and a vertical member on a tractor comprising:

(a) an elongated U-shaped frame having an angular upwardly extending front end attached to the bottom of the vertical member of the tool bar;

(b) a pair of spaced apart posts, each extending vertically from one side of said frame to the free end of the horizontal member of the tool bar wherein a flexible rubber tarpaulin strap extending diagonally from the free end of the horizontal member to the rear end of said frame to hold up the rear end and prevent said frame from flexing down when it is out of the ground and turning around;

(c) a plurality of specifically placed knife blades extending from the bottom of said frame and fixed movably thereon to penetrate the ground and make slices into the crust thereby chopping it up; and

(d) a double hinge provided on the front end of said frame which allows said frame to flex and adjust to the unevenness of the ground and also helps shed any trash the frame encounters.

5,007,486

PERFORATING GUN ASSEMBLY AND UNIVERSAL PERFORATING CHARGE CLIP APPARATUS

Thomas D. Ricles, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

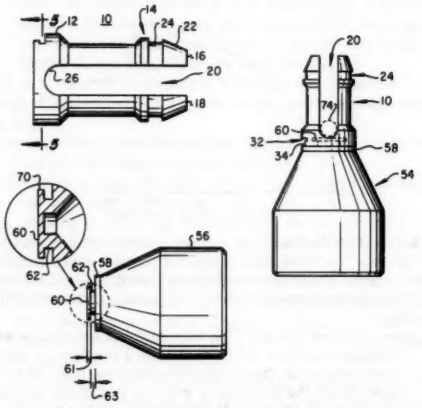
Filed Feb. 2, 1990, Ser. No. 473,729

Int. Cl.[5] E21B *43/117*

U.S. Cl. 175—4.6 **17 Claims**

1. In a perforating gun assembly for use in perforating a casing located down hole in a bore hole, said gun assembly including a cylindrical carrier housing, and a plurality of first ports formed in the housing through which a jet from a shaped charge can emerge, a firing cord for the shaped charge, the shaped charge having a flat washer-type collar at one end, and a plurality of second ports formed in the housing, an improved clip for holding the charge comprising:

a body portion;



a slot therein for receiving the flat washer-type collar of the shaped charge to hold the shaped charge;

a retainer on the body portion for extending through a said second port in the housing a support the shaped charge; and

an opening in the retainer for trapping and positioning the firing cord against the charge for proper firing operation.

5,007,487

METHOD AND APPARATUS FOR MAKING DRILL HOLES UNDER SPATIALLY RESTRICTED CONDITIONS

Olof Dahle, Reken, and Manfred Fischbach, Hattingen, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Hebben & Fischbach GmbH, both of, Fed. Rep. of Germany

Filed Feb. 12, 1990, Ser. No. 479,366

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1989, 3905999

Int. Cl.[5] E21B *17/04*

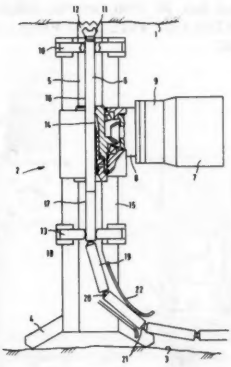
U.S. Cl. 175—57 **10 Claims**

1. A drilling apparatus for drilling straight holes under spatially restricted conditions which comprises:

a longitudinally extending cradle; a fixed front clamping tong mounted on said cradle adapted to clamp a drill rod; a fixed rear clamping tong mounted on said cradle adapted to clamp a drill rod; a movable drive clamping tong mounted on said cradle intermediate said front and rear clamping tongs adapted to clamp and drive a drill rod; drive means for rotating and advancing said drive clamping tong to thereby rotate and advance a drill rod; a drill rod having a plurality of hollow segments; interlock means at each end of said segments for interlocking adjacent segments to form a straight rigid drill rod when said adjacent segments are brought into engagement with each other; a flexible member which passes through each of said segments such that said segments are movable longi-

tudinally along said flexible member between a first position in which two adjacent segments are interlocked to form a straight rigid drill rod portion and a second position in which adjacent segments are spaced from each other to enable said flexible member to bend and said spaced segments to move along a curved defined by said flexible member.

10. A method of drilling bore holes utilizing a drill hole apparatus having a longitudinally extending cradle, a fixed front clamping tong mounted on said cradle adapted to clamp a drill rod, a fixed rear clamping tong mounted on said cradle adapted to clamp a drill rod, a movable drive clamping tong mounted on said cradle intermediate said front and rear clamping tongs adapted to clamp and drive a drill rod, drive means for rotating and advancing said drive clamping tong to thereby rotate and advance a drill rod, wherein said drill rod has a plurality of hollow segments, interlock means at each end of said segment for interlocking adjacent segments to form a



straight rigid drill rod when said adjacent segments are brought into engagement with each other, and a flexible member which passes through each of said segments such that said segments are movable longitudinally along said flexible member between a first position in which two adjacent segments are interlocked to form a straight rigid drill rod portion and a second position in which adjacent segments are spaced from each other to enable said spaced segments to move along a curve defined by said flexible member comprising the steps of:

opening said front clamping tong;

closing the rear clamping tong;

moving the drive clamping tong to a position adjacent said rear clamping tool;

closing said drive clamping tong;

opening said rear clamping tong;

operating said drive means to interlock adjacent drill rod segments, rotate said drill rod and move said drive clamping tong and said drill rod upwardly toward said front clamping tong.

5,007,488

DRILLING NIPPLE GAS TRAP

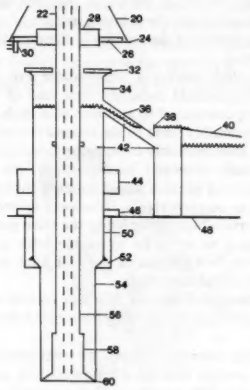
William S. Donovan, Littleton, Colo., assignor to Donovan Brothers Incorporated, Littleton, Colo.

Filed May 16, 1990, Ser. No. 524,163
Int. Cl.[5] E21B *21/00*
U.S. Cl. 175—59 **15 Claims**

1. A device for gathering gas which evolves from the drilling mud exiting a well bore, comprising:

a gas sampling tube located such that entrained gas which evolves into the atmosphere as the drilling mud exists a well bore impinges upon an inlet of said sampling tube;

a means which creates a lower pressure at the inlet of said sampling tube than the atmosphere about said sampling



tube causing said gas to enter said sampling tube and flow to gas analyzers.

5,007,489

DRILLING FLUID METHODS AND COMPOSITION

Dorothy P. Enright; William M. Dye; F. Martin Smith, and Alphonse C. Perricone, all of Houston, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Apr. 27, 1990, Ser. No. 515,573
Int. Cl.[5] E21B *2/00*; C09K *7/00*
U.S. Cl. 175—65 **53 Claims**

1. A method for the prevention of balling of formation cuttings upon the surface of drilling equipment used in conjunction with the drilling, completion or workover of a subterranean well, comprising the steps of:

(1) preparing an aqueous system;

(2) adding to said system a composition comprising:

(a) a non-water soluble polyglycol having a molecular weight of from between about 1,200 and about 10,000;

(b) a surfactant having a hydrophilic/hydrophobic balance of about 4 or more; and

(c) a hydrotrope;

(3) forming an oil-in-water emulsion of said composition within said system by shearing of said system;

(4) introducing the emulsified system into the well for circulation through and out of said well; and

(5) contacting the surface of said drilling equipment with the composition to provide a non-aqueous interface between the equipment surface and the aqueous system.

5,007,490

PROGRESSIVE CAVITY DRIVE TRAIN WITH ELASTOMERIC JOINT ASSEMBLY FOR USE IN DOWNHOLE DRILLING

Russell D. Ide, P.O. Box 744, 641 Arnold Rd., Coventry, R.I. 02816

Filed Jun. 20, 1990, Ser. No. 540,682
Int. Cl.[5] E21B *4/02*
U.S. Cl. 175—107 **24 Claims**

1. A downhole drilling apparatus which includes a progressive cavity drive train comprising:

a housing structure;

a stator, the stator having a longitudinal axis;

a rotor having a true center, the rotor being located within the stator;

the stator and the rotor each having coacting helical lobes which are in contact with one another at any transverse

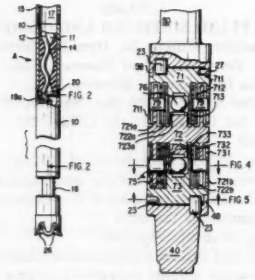
section, the stator having one more helical lobe than the rotor such that a plurality of cavities are defined between the rotor and the stator, and the rotor being adapted to rotate within the stator such that the true center of the rotor orbits the axis of the stator, the orbit having a predetermined radius and the orbiting motion of the rotor causing a progression of the cavities in the direction of the axis of the stator;

a first stub shaft having a longitudinal axis and first and second longitudinal ends, the first end of the first stub shaft being connected to and movable with the rotor;

a first joint assembly fixed to the second end of the first stub shaft; the joint assembly comprising first, second and third longitudinally arranged joint portions, the first portion and the second portion being coupled through an elastomer so as to be pivotable with respect to one another, the second portion being coupled to the third portion through an elastomer so as to be pivotable with respect to one another, the first portion of the first joint assembly being fixed to the first stub shaft;

an intermediate shaft having first and second ends, the first end being fixed to the third portion of the first joint assembly;

a second joint assembly, the second joint assembly comprising first, second and third longitudinally arranged joint portions, the first portion and the second portion being coupled through an elastomer so as to be pivotable with respect to one another, the second portion being coupled



to the third portion through an elastomer so as to be pivotable with respect to one another, the first portion of the second joint assembly being fixed to the second end of the intermediate shaft;

a second stub shaft having a longitudinal axis which is substantially colinear with the axis of the stator and first and second longitudinal ends, the second stub shaft being rotatably mounted about its longitudinal axis within the housing structure, the first end of the second stub shaft being fixed to the second end of the intermediate shaft, the second end of the second stub shaft being connected to a drill bit drive shaft; and

whereby the first and second stub shafts are coupled such that in response to the flow of fluid through the stator the first stub shaft can rotate about its axis and orbit about the axis of the second stub shaft at the same time the second stub shaft rotates about its longitudinal axis so as to cause rotation of the drill bit drive shaft.

22. A coupling comprising: a first stub shaft having first and second longitudinal ends; a second stub shaft having first and second longitudinal ends and an intermediate shaft having first and second longitudinal ends; the second longitudinal end of the first stub shaft being pivotably connected to the first longitudinal end of the intermediate shaft and the first longitudinal end of the second stub shaft being pivotably connected to the second longitudinal end of the intermediate shaft; and

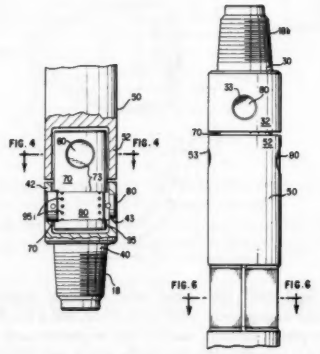
wherein the pivotable connection between the first stub shaft and the intermediate shaft and the second stub shaft and the intermediate shaft is provided by a joint assembly which includes a plurality of concentric annular extensions secured to each of the second end of the first stub shaft, the first end of the second stub shaft and the first and second ends of the intermediate shaft, the concentric annular extensions formed on the stub shafts being spaced so as to fit within spaces between the concentric annular extensions formed on the intermediate shaft such that the annular extensions on the stub shafts can be interleaved with the annular extensions on the intermediate shaft, the joint assemblies further comprising an elastomeric layer extending between and bonded to the interleaved annular extensions of the stub shafts and the intermediate shaft, the elastomeric layer being flexible in shear so as to allow pivoting of the stub shafts with respect to the intermediate shaft.

5,007,491

DOWNHOLE DRILLING APPARATUS PROGRESSIVE CAVITY DRIVE TRAIN WITH SEALED COUPLING

Russell D. Ide, P.O. Box 744, 641 Arnold Rd., Coventry, R.I. 02816

Filed Jun. 20, 1990, Ser. No. 540,692
Int. Cl.[5] **E21B** *4/02;* **F01C** *1/10;* **F16D** *3/02, 3/16*
U.S. Cl. 175—107 **12 Claims**



1. A progressive cavity drive train comprising:

a housing structure;

a stator, the stator having a longitudinal axis;

a rotor having a true center, the rotor being located within the stator;

the stator and the rotor each having coacting helical lobes which are in contact with one another at any transverse section, the stator having one more helical lobe than the rotor such that a plurality of cavities are defined between the rotor and the stator, and the rotor being adapted to rotate within the stator such that the true center of the rotor orbits the axis of the stator, the orbit having a predetermined radius and the orbit causing a progression of the cavities in the direction of the axis of the stator;

a first stub shaft having a longitudinal axis and first and second longitudinal ends, the first end of the first stub shaft being connected to and movable with the rotor, the second end of the first stub shaft comprising a yoke;

a second stub shaft having first and second longitudinal ends and a longitudinal axis which is substantially colinear with the axis of the stator, the second stub shaft being rotatably mounted about its longitudinal axis within the housing structure, the second end of the second stub shaft comprising a yoke;

a sealed universal joint assembly coupling the yoke formed on the first stub shaft to the yoke formed on the second stub shaft, the sealed universal joint including at least two transverse cylindrical bores and one cylindrical pivot pin extending through each of the cylindrical bores such that

an annular space is formed between the outer surface of each of the cylindrical pivot pin and the inner surface of the cylindrical bore through which it extends, a plurality of rollers provided in the annular space and an elastomer encasing the rollers and substantially filling the annular space so as to isolate the rollers from the universal joint's environment; and

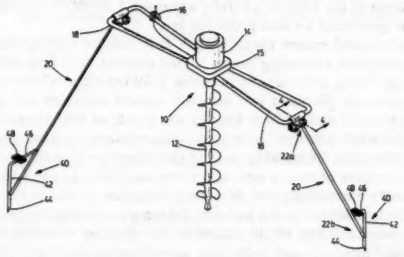
whereby the sealed universal joint couples the first and second stub shafts such that the first stub shaft can rotate about its axis and orbit about the axis of the second stub shaft at the same time the second stub shaft rotates about its longitudinal axis.

5,007,492

SAFETY STABILIZER FOR AUGER

Patrick C. P. Giroux, 902 Port Union Road, West Hill, Ontario M1C 2L9, Canada

Filed May 1, 1990, Ser. No. 517,341
Claims priority, application Canada, May 1, 1989, 599194
Int. Cl.[5] E21B *7/20*
U.S. Cl. 175—170 **8 Claims**



1. A safety stabiliser apparatus for an auger of the type having an auger screw, an engine and drive mechanism mounting on top the auger for operating said screw, and at least two handle means extending to either side of said engine, said stabiliser apparatus, in turn, comprising:

rotatable and swingable upper joint means and means for attaching same to respective said handle means;

support leg assemblies connected to respective said joint means, each said assembly including a leg member having an upper end and a lower end, and,

anchor means at the lower end of each said leg member adapted to securely engage the ground, said anchor means rotatable and swingable relative to the ground, said upper joint means and said anchor means thereby permitting movement of said leg member about both a vertical axis and a horizontal axis relative to said handle means, and relative to the ground, thereby to allow said handle means on said auger to descend towards the level of the ground and to rotate relative to the axis of said auger while said anchor means remains anchored in position on the ground.

5,007,493

DRILL BIT HAVING IMPROVED CUTTING ELEMENT RETENTION SYSTEM

Robert B. Coolidge, Spring, and David M. Nguyen, Houston, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

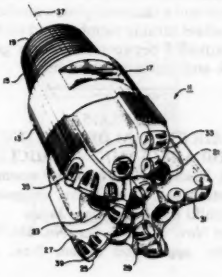
Filed Feb. 23, 1990, Ser. No. 484,406
Int. Cl.[5] E21B *10/46*
U.S. Cl. 175—329 **12 Claims**

12. A drill bit having an improved cutting element retention system for drilling a well borehole having a bottom, the bit comprising:

a bit body having a connecting end for engaging the mating connecting end of a pipe string used to support the bit within the well bore, the bit body having an opposite end which defines a bit face;

a plurality of fixed cutter cutting elements secured on the bit face, each fixed cutter cutting element having a mounting body with a leading face and a layer of superhard material carried on the leading face of the mounting body to define a cutting face for the cutting element; and

at least one trough formed in the mounting body on the bit face behind the cutting ace of each cutter cutting element,



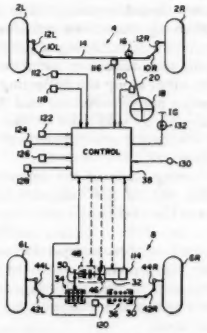
each trough being sized and shaped whereby each cutting element has a characteristic wear flat bearing created by contact between the cutting element and the borehole bottom, the surface area of the wear flat bearing area of each cutting element retention system approaching a constant cross-sectional area throughout the entire cutting element usage.

5,007,494

REAR WHEEL TURNING SYSTEM

Hiroshi Ohmura; Satoru Tanabe; Junji Yoshioka, and Hirotaka Kanazawa, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed May 30, 1989, Ser. No. 358,020
Claims priority, application Japan, May 30, 1988, 63-132260; Nov. 18, 1988, 63-292187
Int. Cl.[5] B62D *5/04*
U.S. Cl. 180—79.1 **10 Claims**



1. A rear wheel turning system for a vehicle comprising:

a rear wheel turning member which is connected to rear wheels of the vehicle and turns the rear wheels,

an electric motor which is operatively connected to the rear wheel turning member by way of a driving force transmitting system and to a steering wheel and displaces the rear wheel turning member, thereby causing the rear wheels to turn in response to an operation of the steering wheel,

a rear-wheel-neutralizing means which urges the rear wheel

turning member to a neutral position in which the rear wheels are held in a straight-ahead position, and

a pair of clutch mechanisms which are provided in series in a driving path of the driving force transmitting system between the electric motor and the rear wheel turning member and are adapted such that they disconnect the latter from the former, which permits the latter to return to the neutral position under the force of the rear-wheel-neutralizing means,

wherein said driving force transmitting system comprises a worm gear mechanism provided on an output shaft of the electric motor and a rack-and-pinion mechanism provided on the rear wheel turning member, and said clutch mechanisms are provided between the worm gear mechanism and the rack-and-pinion mechanism.

5,007,495

PROPULSIVE AIR STREAM DEFLECTING APPARATUS FOR AIR CUSHION VEHICLE

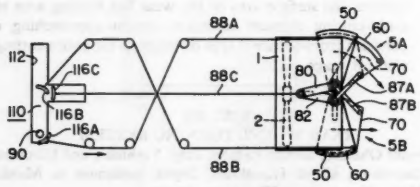
Ryuichi Yoshida, Takarazuka; Tetsushi Yamamura, Takasago, and Koji Kadota, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Nov. 15, 1989, Ser. No. 436,784

Claims priority, application Japan, Nov. 16, 1988, 63-148499[U]

Int. Cl.[5] B60V *1/14*

U.S. Cl. 180—117 **6 Claims**



1. A propulsive air stream deflecting apparatus of an air cushion vehicle including a hull, said apparatus comprising:

an air duct mounted on the hull and having a longitudinal axis, the air duct having a rear open end;

a propeller fan installed within said duct for producing a propulsive air stream flowing through the air duct out said rear open end to provide thrust to the hull;

a pair of deflecting assemblies mounted to said duct,

each of said deflecting assemblies including a plurality of deflecting members each having a substantially arcuate deflecting wall, said deflecting members being nestable one within the other along the deflecting walls thereof,

vertically extending pivots mounting said deflecting assemblies, respectively, to said duct at the rear open end thereof in positions that are symmetrical with respect to said longitudinal axis,

the arcuate deflecting walls of the deflecting members of each respective one of the deflecting assemblies being concave toward the vertically extending pivot mounting said respective one of the deflecting assembles to the duct,

the deflecting members of each respective one of the deflecting assemblies being pivotal, about the pivot mounting said respective one of the deflecting assemblies to the duct, between a retracted nested state and a final telescopically extended state;

said duct having first guide means for supporting and guiding said vertically extending pivots in a manner in which the pivots are movable toward and away from one another, laterally with respect to the longitudinal axis of said duct, between respective laterally inward and outward positions; and

control means, operatively connected to said deflecting assemblies and to said pivots, for positioning the deflecting members in both of said deflecting assemblies in said nested retracted state while positioning said pivots at said laterally inward positions to maintain the arcuate deflecting walls of the deflecting members of said deflecting assemblies out of the path of the stream of air flowing from the rear open end of said duct such that a propulsion thrust state is provided in which a forward thrust on the hull is generated by said propeller fan,

for maintaining said pivots at said laterally inward positions while selectively moving the deflecting members of either one of said deflecting assemblies from said nested retracted state toward said final telescopically extended state to move the arcuate deflecting walls of the selected one of said deflecting assemblies into the path of the stream of air flowing from the rear open end of said duct such that a steering state is provided in which a sidewards thrust on the hull is generated by said propeller fan, and

for moving the deflecting members of both of said deflecting assemblies toward said final telescopically extended state while moving said vertically extended pivots from said laterally inward toward said laterally outward positions to cover the rear open end of said deflecting duct while locating terminal ends of the deflecting assemblies to the outside of said air duct such that a steering state is provided in which the arcuate deflecting walls guide the air flowing from the rear open end of said duct toward the front of the vehicle whereby a rearward thrust on the hull is generated by said propeller fan,

said control means comprising a first linkage linking said vertically extending pivots to one another, said first linkage being articulatable between a folded state which locates the pivots at said laterally inward positions and an extended state which locates the pivots at said laterally outward positions, a second linkage linking a most telescopically extendable one of the plurality of deflecting members of one of said deflecting assemblies to the vertically extending pivot mounting the other of said deflecting assemblies to the hull and linking a most telescopically extendable one of the plurality of deflecting members of said other of said deflecting assemblies to the vertically extending pivot mounting said one of the deflecting assemblies to the hull such that when said vertically extending pivots are in said laterally outermost positions, the second linkage places the deflecting members of each of said deflecting assemblies in said final telescopically extended state, and an actuator selectively operable to telescopically extend the deflecting members of either of said deflecting assemblies from said retracted nested state toward said final telescopically extended state and operable to articulate said first linkage between the folded state and the extended state thereof.

5,007,496

AUTOMATED UNDERGROUND HAULAGE TRUCK

Brian T. Whitten; Pierre Veraart; Andrew Kwasniewski, and Kurt Vollenwyder, all of Kingston, Canada, assignors to Inco Limited, Toronto, Canada

Continuation of Ser. No. 189,040, May 2, 1988, abandoned. This application Jan. 18, 1990, Ser. No. 466,867

Int. Cl.[5] E01B *25/28*

U.S. Cl. 180—131 **12 Claims**

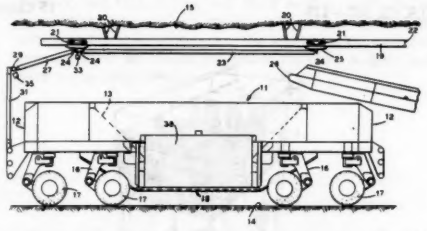
1. A system for guiding a steerable, self-propelled generally rectangular vehicle along a non-tracked route comprising:

a a substantially continuous, elongated guide means fixed along said route in a substantially constant relationship to the ideal path of said vehicle, said vehicle being longitudinally symmetrical and having interlinked front and rear wheels arranged to pivot in mirror image with respect to the vertical transverse plane at body center of said vehicle on axes which, when extended, intersect on an extension of said central transverse plane of said vehicle;

b a draw bar swivelly connected at one end to said vehicle and swivelly connected at an opposite end to one end of a spacer bar, said spacer bar having opposed ends which are connected to said guide means for movement therealong;

c first detection means for sensing the angle between said drawbar and a longitudinal reference line of said vehicle and second detection means for sensing the angle between said spacer bar and said drawbar;

d means responsive to the output of said at least two detection means to determine any directional and lateral posi-



tional error of said vehicle with respect to said guide means and to program sequence of steering maneuvers to correct any said error; and

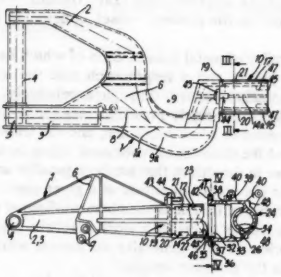
e steering means connected with said interlinked front and rear wheels adapted to carry out said programmed sequence of steering maneuvers.

5,007,497

ARM SUPPORT DEVICE FOR A ROTATING ELEMENT

Daniel Trema, Bezons, France, assignor to Elf France, Courbevoie, France

Filed Mar. 2, 1989, Ser. No. 317,921
Claims priority, application France, Mar. 14, 1988, 88 03280
Int. Cl.[5] B62K *25/20;* B62M *9/16*
U.S. Cl. 180—219 **8 Claims**



1. A single swinging suspension rear arm for the driving wheel of a motorcycle comprising:

a free end portion adapted to have a rotary axle maintained thereon in a rigid and adjustable manner, and comprising axial outside polygonally disposed bearing surfaces;

a bracket piece removably and adjustably mounted on the free end portion of the arm and adapted to receive the rotary axle, said bracket piece comprising an inner wall having transversely positioned bearing faces adapted to contact the corresponding axial outside bearing faces of the free end portion of the arm when the bracket piece is mounted thereon, and at least one slot axially disposed in said inner wall at a position opposed to one of said inner wall bearing faces, said bracket piece adapted to move axially along the arm; and

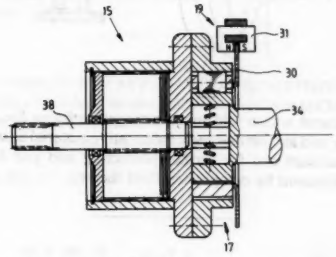
screw means adapted to radially close the slot thereby preventing further movement of the bracket piece along said arm.

5,007,498

DRIVING ASSEMBLY

Helmut Wiese, Neunkirchen-Seelscheid, and Paul-Erich Schönenbrücher, Much-Kranüchel, both of Fed. Rep. of Germany, assignors to Viscodrive GmbH, Lohmar, Fed. Rep. of Germany

Filed Aug. 29, 1989, Ser. No. 399,823
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1988, 3830199
Int. Cl.[5] B60K *23/08*
U.S. Cl. 280—248 **12 Claims**



1. A driving assembly, comprising:

a drive member;

a driven member;

a viscous shear coupling; and

a clutch between the drive member and the viscous shear coupling, the clutch comprising a drive part connected to the drive member and a driven part connected to the viscous shear coupling, torque-transmitting elements between said parts, a control member interposed between said parts and with which said elements are engaged, a brake comprising a first member connected to the control member and a second non-rotatable member, said first and second members being permanently held out of contact, means selectively operable to apply said brake to brake said control member independently of said drive part and said driven part, such that at all times if the driven part overruns the drive part, the clutch transmits no torque, while if the drive part overruns the driven part, torque is transmitted from the drive part to the driven part by said torque-transmitting elements when the brake is applied to brake the control member but the clutch transmits no torque from the drive part to the driven part when the said control member is not braked.

5,007,499

SILENCER FOR A CENTRIFUGAL COMPRESSOR

Charles E. Ebbing, Fayetteville, and Donald G. Neville, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 23, 1990, Ser. No. 483,618
Int. Cl.[5] F01N *1/24*
U.S. Cl. 181—258 **16 Claims**

1. An improved silencer device having a sound absorptive material and adapted for placement in a discharge line of a centrifugal compressor comprising:

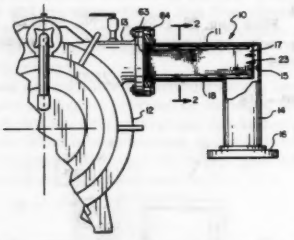
a sound attenuation frame for mounting in said discharge line of the compressor;

at least one pad of absorptive material installed in said frame, said material being of a brittle nature and thus susceptible, if not protected, of having parts thereof broken off by movement of said material within the discharge line;

a cloth enclosure disposed within said sound attenuation frame and around said at least one pad of material to allow a transmission of sound therethrough but to generally inhibit a direct impingement of a compressed gas on said pad, said cloth enclosure being composed of a fine weave

material consisting of fibers which resist brittle fracture/-failure; and

a metal screen placed adjacent said cloth enclosure and



secured within said sound attenuation frame for containing said at least one pad of absorptive material in said cloth enclosure and for further protecting said pad from impingement by compressed fluid thereon.

5,007,500

DEVICE FOR THE MAINTENANCE OF LARGE-CAPACITY CONTAINERS

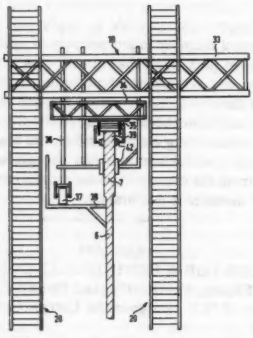
Harald Klänne, Berlin, Fed. Rep. of Germany, assignor to ISB Generalunternehmen fur Industriespezialbau, Berlin, Fed. Rep. of Germany

Filed Jan. 5, 1989, Ser. No. 293,632

Claims priority, application Fed. Rep. of Germany, Jan. 6, 1988, 3800344; Sep. 8, 1988, 3830589

Int. Cl.[5] E04G *3/10, 3/14*

U.S. Cl. 182—38 **12 Claims**



1. A device for the maintenance of a large-capacity container having a substantially round cross section and an upper edge, comprising:

a scaffolding structure for accommodating a plurality of working platforms along a wall, said scaffolding structure being fulcrumed swingably around a vertical centerline which forms an axis of symmetry of the large-capacity container as a rotational axis, the scaffolding structure being movably placeable on an area of the upper container edge, the scaffolding structure comprising:

(a) a pivot which is centrally mountable on a roof of the container;

(b) a plurality of pivoting swivel arms for extending radially outwardly from the pivot mounting and having free ends for protruding beyond the container wall; and

(c) ladder lattices fastenable to the free ends of the swivel arms.

5,007,501

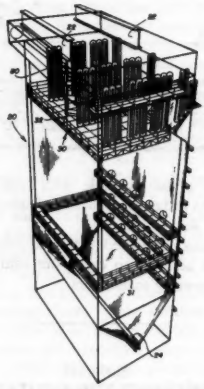
APPARATUS FOR FACILITATING THE INTERNAL INSPECTION AND REPAIR OF LARGE PRESSURE VESSELS

Peter J. Baston, 1450 Meadowood Village Dr., Ft. Worth, Tex. 76120

Filed Sep. 1, 1989, Ser. No. 402,836

Int. Cl.[5] E04G *3/10, 3/14*

U.S. Cl. 182—128 **15 Claims**



1. An apparatus having particular utility in serving as a work platform within a large pressure vessel such as a boiler-furnace for generating steam, such pressure vessels being of the type commonly found in power plants for generating electricity, and such pressure vessels having a top and a bottom and a plurality of side walls, and having a relatively small access hole near the bottom, and the size of the access hole being large enough so that a workman may crawl therethrough in order to gain entrance to the pressure vessel, comprising the combination of:

a. a plurality of metal trusses, each of which has a relatively short height and a length such that the trusses can be individually inserted through a relatively small access hole that is routinely provided near the bottom of a pressure vessel to admit workmen, and the trusses being configured for connection with each other in an end-to-end manner in directions that are both parallel and perpendicular to the length direction of a given truss;

b. a plurality of thin deck members configured to rest on top of the trusses to create a work platform when the trusses are oriented in a generally horizontal working position within the pressure vessel;

c. means for structurally connecting the trusses and deck members together inside the pressure vessel without the use of any tools; and

d. cable means for selectively raising and lowering the work platform within the pressure vessel, including a plurality of steel cables adapted to be temporarily suspended from the top of the pressure vessel.

5,007,502

SELF-LEVELING SAW HORSE

Alan F. Shapiro, 24A McClellan St., Amherst, Mass. 01002, assignor to Alan F. Shapiro, Amherst, Mass. and David Edwardson, New York, N.Y.

Filed Jul. 16, 1990, Ser. No. 552,826

Int. Cl.[5] B27B *21/00;* B25H *1/06*

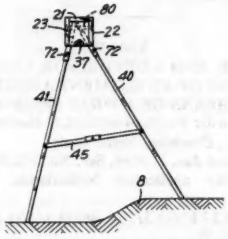
U.S. Cl. 182—155 **23 Claims**

1. A saw horse, comprising:

a trestle, including a substantially flat surface for supporting weight and a downwardly opening box formed with two

side walls, running substantially the entire length of the trestle and two end walls connecting the side walls;

two pairs of legs adapted to rotate from a closed position in which each of the legs is contained within the box formed by the trestle and an open position where each of the legs is in a generally vertical orientation, each leg having an enlarged opening proximate its upper end in the open position, a support surface at its lower end in the open position and first, second and third working surfaces for leveling the pairs of legs, stably supporting weight on the trestle and enabling rotation of the legs about the enlarged opening from the closed position to the open position and vice versa, respectively;



a first rod coupled between the side walls proximate a first end wall and extending through the openings in both legs forming one of the pairs of the legs; and

a second rod coupled between the side walls proximate the second end wall and extending through the openings in both legs forming the second of the pairs of legs;

the first operating surface on each leg of a pair of legs being in contact with the first operating surface of the other leg of its pair and the second surfaces of each leg of a pair being in contact with the underside of the top surface of the trestle when the sawhorse is in the open position;

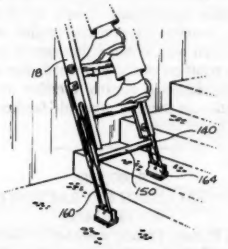
whereby exerting pressure on the top surface of the trestle causes sliding adjustment of the first operating surfaces of each pair to level the trestle and stably support the saw horse on uneven surfaces.

5,007,503

LADDER LEVELLING DEVICE WITH LOCKING MEANS

Walter Sturm, 81 Benchlands Drive, Cochrane, Alberta, Canada T0L 0W1

Filed Jul. 19, 1990, Ser. No. 554,430
Int. Cl.[5] E06C *7/44*
U.S. Cl. 182—202 **8 Claims**



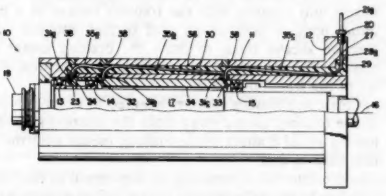
1. A device for adapting the length of a pair of legs to the unevenness of a surface, said device comprising a pair of vertically reciprocally extendable legs, each extendable leg guidable mounted in a tubular member attached to said pair of legs, said tubular member in the shape of a downwardly open U, a longitudinally slidable chain like connecting element accommodated in said tubular member, said connecting element being connected at its each end to one of said pair of extendable legs, said connecting element comprising a flexible core having thereon a plurality of spheres, each of said spheres separated by a spacer, said tubular member including coextensive locking means through which said connecting element passes, said locking means having a passage substantially in line with said tubular member and a chamber having a plurality of socket means adapted to releasably receive said sphere on said connecting elements, said chamber being positioned on substantially the same place as said passage, whereby weight on said extendable legs forces said connecting element to extend into said chamber wherein said spheres are received in said socket means and retained therein until weight is removed from both of said legs.

5,007,504

LUBRICATION APPARATUS AND METHOD

Raymond L. Hallbach, Simpsonville, S.C., assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 10, 1990, Ser. No. 507,080
Int. Cl.[5] F16N *21/00*
U.S. Cl. 184—8 **8 Claims**



1. A lubrication apparatus for a machine, comprising:

an elongate bearing support member having an axis defined along its length;

an air stream and lubricant supply site proximal one end of said support member;

a rotary bearing spaced along said axis from said one end;

a conduit extending between said supply site and said bearing, within an elongate hole in a wall of said support, said conduit having at least one bend; and

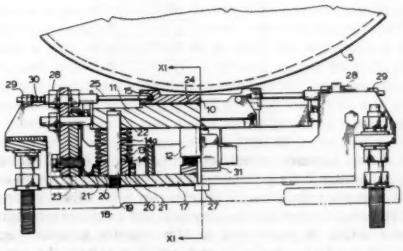
means for affixing said conduit in position with said support, said conduit providing a smooth, non-linear transition path for conveying an air stream and lubricant from said supply site to said bearing.

5,007,505

ELEVATOR TRACTION SHEAVE BRAKE

Robert Lindegger, Scarborough, Canada, assignor to Northern Elevator Limited, Ontario, Canada

Filed Mar. 19, 1990, Ser. No. 495,138
Int. Cl.[5] B66B *5/16*
U.S. Cl. 187—89 **28 Claims**



1. An elevator traction sheave brake for use on a counterbalanced elevator comprising:

(a) a horizontally disposed supporting member mounted to a fixed carriage and located either above or below a traction sheave along the projection of a substantially vertical diameter of the traction sheave, adjacent a rim of the traction sheave and between hoist ropes, the supporting member being adapted to be moved in substantially vertical directions towards or away from the rim of the traction sheave;

(b) a horizontally disposed friction member adjacent to the supporting member in between the supporting member and the traction sheave mounted to the fixed carriage, adapted to be moved in substantially vertical directions either towards or away from the rim of the traction sheave in conjunction with the supporting member and adapted to be moved in substantially horizontal directions substantially parallel to the planes of the faces of the traction sheave independently of the supporting member and having a means for braking which uses friction to produce a dynamic retarding torque and a static holding torque when compressed against the traction sheave;

(c) at least one positioning member adapted to move both the supporting member and the friction member in conjunction in a substantially vertical direction towards the rim of the traction sheave thereby bringing the braking means into contact with the traction sheave at a preset initial braking position so that further rotation of the traction sheave tends to draw the braking means back towards the projection of the substantially vertical diameter of the traction sheave;

(d) at least one biasing member adapted to resist movement of the braking means away from the traction sheave following initial contact of the braking means with the traction sheave; and

(e) fixed means for controlling the movement of the friction member in the substantially horizontal directions to provide a preset braking profile.

5,007,506

ELEVATOR REMOTE-CONTROL METHOD

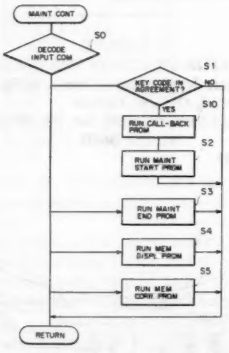
Shigehiko Suzuki, and Kenzo Tachino, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Mar. 20, 1990, Ser. No. 496,222

Claims priority, application Japan, May 18, 1989, 1-122789

Int. Cl.[5] B66B *3/00*

U.S. Cl. 187—101 **4 Claims**



1. In an elevator remote-control method for an elevator control system having an elevator control circuit which controls a service situation of an elevator and which performs maintenance control for the elevator, and a remote monitoring center which is connected to the elevator control circuit through a telephone circuit and which monitors the service situation of the elevator,

wherein when the elevator control circuit has received a maintenance command for maintenance control from the remote monitoring center, said control circuit performs maintenance control of the elevator and executes a maintenance control program stored therein;

an elevator remote-control method comprising,

when said elevator control circuit has received said maintenance command,

executing a call-back program which comprises a ring-off processing step of disconnecting said telephone circuit, and a reconnection step of dialing said remote monitoring center to reconnect said telephone circuit,

whereupon said control circuit executes any program of the maintenance control program conforming to the maintenance command.

5,007,507

METHOD OF, AND A DEVICE FOR, CONTROLLING THE ROTATION OF AN ELEMENT ABOUT AN AXIS OF MEANS OF A WRAP SPRING

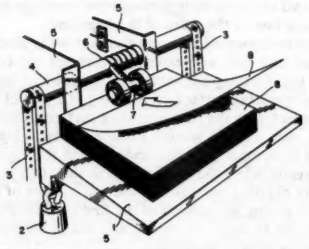
Jeichienus A. van der Werff, Montfoort, Netherlands, assignor to Hadewe B. V., Drachten, Netherlands

Filed Jun. 7, 1989, Ser. No. 362,501

Claims priority, application Netherlands, Jun. 7, 1988, 8801461

Int. Cl.[5] F16D *51/04*; B65H *31/10, 1/10*

U.S. Cl. 188—77 W **13 Claims**



1. A device for controlling the rotation of an element about an axis, comprising:

means for exerting a continuous torque on the element; and

means for selectively precluding rotation of the element, said rotation precluding means including

a wrap spring wrapped around the element, one end of said wrap spring being anchored

a control member attached to an other end of said wrap spring such that said wrap spring is wrapped tightly about the element to preclude rotation of the element when said control member is in a first position, and said wrap spring is wrapped loosely about the element so that the element may rotate under said continuous torque when said control member is out of said first position, rotation of the element under said continuous torque causing said control member to return to said first position to thereby preclude further rotation of the element.

5,007,508

FRICTION SYSTEM USING REFRACTORY COMPOSITE MATERIALS

Alain Lacombe, Pessac, France, assignor to Societe Europeenne de Propulsion, Suresness, France

Continuation of Ser. No. 248,319, Sep. 16, 1988, abandoned, which is a continuation of Ser. No. 10,321, Feb. 3, 1987, abandoned. This application Mar. 1, 1990, Ser. No. 488,481

Claims priority, application France, Feb. 5, 1986, 86 01590

Int. Cl.[5] F16D *65/12, 69/02*

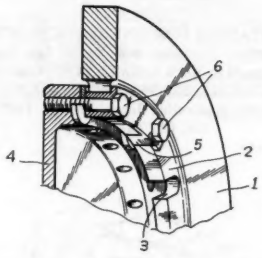
U.S. Cl. 188—251 A **7 Claims**

1. A friction system, comprising:

a first friction element having a first confronting surface, and

wherein said first friction element is made of a carbon-carbon composite material;

a second friction element having a second confronting surface, and wherein said second friction element is made of a multiphase composite material comprised of a fibrous reinforcement having fibers selected from the group consisting of carbon fibers and silicon carbide fibers, and a matrix having a principal phase which forms a major part



of said matrix and is comprised of silicon carbide, and a secondary phase which forms a minor part of said matrix and is comprised of a refractory material selected from the group consisting of titanium carbide, zirconium carbide, tantalum carbide, boron carbide, elemental boron, silicon nitride, boron nitride and pyrolytic carbon, and

wherein said first confronting surface of said first friction element confronts and is frictionally coupled to said second confronting surface of said second friction element.

5,007,509

BRAKE SYSTEM

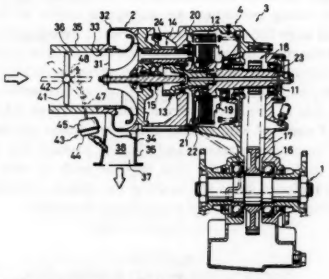
Yoshihisa Koizumi, Fujisawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Oct. 2, 1989, Ser. No. 416,084

Claims priority, application Japan, Oct. 31, 1988, 273026

Int. Cl.[5] F16D *57/06*

U.S. Cl. 188—271 **19 Claims**



1. A brake system for a vehicle, comprising:

an impeller connected to a member of a power transmission line of the vehicle for applying a brake force to said member;

means for housing the impeller, and an air passage for introducing or discharging external air to and from the impeller;

a throttle valve disposed in the air passage for adjusting the air flow rate in the air passage; and

control means for actuating the throttle valve in accordance with the air flow rate in the air passage.

5,007,510

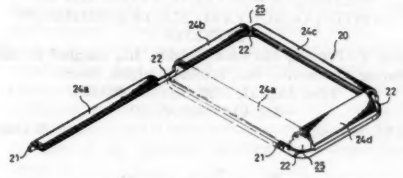
FRAME ASSEMBLY FOR CASE OR SIMILAR ARTICLE

Vichai Houng, No. 198-200, Sec. 1, Kang Ning Rd., Taipei, Taiwan

Filed Jul. 26, 1990, Ser. No. 558,281

Int. Cl.[5] A45C *13/04*

U.S. Cl. 190—122 **4 Claims**



1. A frame assembly for a case or similar article comprising:

a first and a second one-piece frame each forming a closed loop and having adjacent ends, said first and second frames each being composed of a plurality of side portions interconnected by a respective curved brace portion, two said side portions and said one corresponding curved brace portion defining a corner opening, each frame having a first peripheral groove extending along an inside wall of each side portion adapted for receiving a side wall, said first frame comprising an engagement groove engageable with a tapered projection of said second frame;

a plurality of corner pieces each insertable into a corresponding corner opening of each frame; and

hinge means being disposed on a respective outer wall of said first and second frames so that said first and second frames are hingedly pivotal with respect to each other.

5,007,511

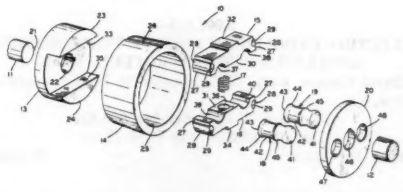
BI-DIRECTIONAL BACK STOPPING CLUTCH

Robert J. Ostrander, Sterling Heights, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Nov. 2, 1989, Ser. No. 430,811

Int. Cl.[5] F16D *51/12*

U.S. Cl. 192—8 R **8 Claims**



1. In a bi-directional back stopping clutch including a brake drum, a pair of adjacent brake shoes located within said brake drum, said adjacent shoes defining two spaced openings therebetween, a pair of output pins having first ends located in said spaced openings and having second ends, an output member having a pair of spaced openings receiving said second pin ends, and means for applying a driving torque through said shoes and said pins to said output member, said pins skewing in response to a predetermined back driving torque on said output member to move said brake shoes in contact with said brake drum, the improvement wherein each pin has a first rounded surface located at the point of contact with said output member opening, a second rounded surface located at the point of contact with one of said shoes as said pin becomes skewed, and a third rounded surface located at the point of contact with the other of said shoes as said pin becomes skewed, and wherein said rounded surfaces are spaced to provide a predetermined leverage ratio β/α, wherein β equals the distance in the direction of the axis of such pin between said

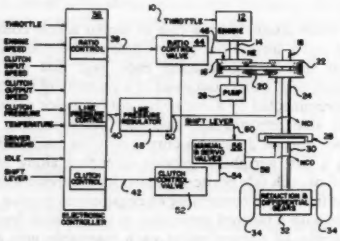
first and second rounded surfaces and α equals the axial distance on such pin between said second and third rounded surfaces, said pin having a smaller diameter at the location of said first rounded surface than at the locations of said second and third rounded surfaces.

5,007,512

TECHNIQUE FOR CLUTCH CONTROL IN CONTINUOUSLY VARIABLE TRANSMISSION SYSTEMS

Werner P. Petzold, Harwood Heights, Ill., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Aug. 31, 1989, Ser. No. 402,052
Int. Cl.[5] B60K *41/22*
U.S. Cl. 192—3.51 **23 Claims**



1. In a continuously variable transmission system for providing torque transfer in a vehicle having a fluid actuated clutch apparatus and operable in a plurality of operating modes including a forward mode and a reverse mode, a clutch control system for regulating fluid flow for controlling torque transfer by said fluid actuated clutch apparatus, comprising:

means for sensing the vehicle operating mode; and

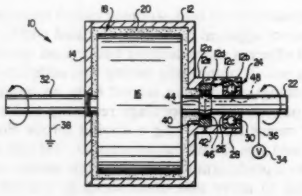
means responsive to said means for sensing the vehicle operating mode for supplying a first set of parameters for controlling fluid flow to said fluid actuated clutch apparatus in response to a sensing of a forward mode and a second set of fluid transfer parameters for controlling fluid flow to said fluid actuated clutch apparatus in response to a sensing of a reverse mode.

5,007,513

ELECTROACTIVE FLUID TORQUE TRANSMISSION APPARATUS WITH FERROFLUID SEAL

J. David Carlson, Cary, N.C., assignor to Lord Corporation, Erie, Pa.

Filed Apr. 3, 1990, Ser. No. 503,831
Int. Cl.[5] F16D *37/02*; F16J *15/40*
U.S. Cl. 192—21.5 **24 Claims**



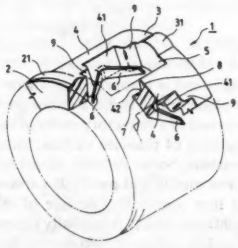
1. Apparatus for controlling the transmission of force, said apparatus comprising first and second members adapted for relative movement, said first member defining a chamber and having a circular opening, said second member extending within said chamber in a spaced relation to said first member, an electroactive fluid disposed in the space between said members, a shaft extending from said second member and through said opening, the diameter of said shaft being less than the diameter of said opening to define an annular space, means for applying an electric field between said members and to said fluid for transmitting forces between said members by said fluid according to the strength of said electric field, a ferrofluid disposed in said annular space and immiscible with said electroactive fluid, and magnetic circuit means for applying a concentrated magnetic field in said annular space and to said ferrofluid to maintain said ferrofluid in said annular space as a seal.

5,007,514

RETAINER FOR ONE-WAY CLUTCH

Tsuneichi Hattori, Fukuoka, and Kazuo Iga, Nara, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Feb. 20, 1990, Ser. No. 483,202
Claims priority, application Japan, Feb. 22, 1989, 1-20126[U]
Int. Cl.[5] F16D *3/34*
U.S. Cl. 192—45 **6 Claims**



1. A retainer for a one-way clutch, said retainer being made of a synthetic resin and including a pair of axially spaced annular portions having a circular periphery and a plurality of parallel column portions each having first and second sides, said annular portions and said column portions being integrally molded from said resin and cooperating to define roller pockets between adjacent column portions, said column portions extending between and coupling said annular portions to each other and being disposed at equal angular intervals along the circular periphery of said annular portions, and, two elastic finger members integrally extending into a roller pocket in cantilever manner from adjacent proximal ends at said first side of each of said column portions and flaring outwardly to terminate at spaced distal ends, said distal ends of said elastic finger members being positioned to engage a roller in the roller pocket to urge the engaged roller toward the second side of a second column defining a second side of the roller pocket, said second side of each of said column portions including an inner projecting part and an outer projecting part projecting toward the first side of the next adjacent column portion; wherein the width of each of said elastic finger members gradually decreases from the proximal end thereof toward the distal tip thereof; and wherein the first side of each of said column portions includes stops for limiting the elastic deformation of said elastic finger members toward said first side.

5,007,515

VISCOUS COUPLING APPARATUS

Minoru Shimizu, Tochigi, Japan, assignor to Tochigifujisangyo Kabushiki Kaisha, Japan

Filed Jan. 3, 1989, Ser. No. 292,839
Claims priority, application Japan, Jan. 12, 1988, 63-3147
Int. Cl.[5] F16D *35/00*
U.S. Cl. 192—58 A **5 Claims**

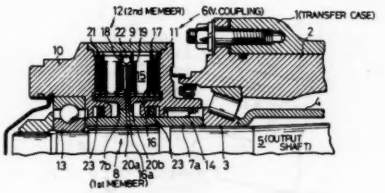
1. A viscous coupling apparatus for transmitting torque from a first rotary member to a second rotary member, comprising:

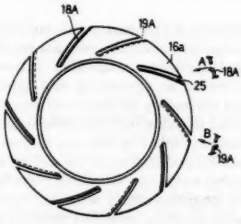
(a) a working chamber formed between the first and second rotary members and filled with a viscous fluid;

(b) a series of first annular resistance plates fixedly arranged

at axially spaced intervals on an outer circumferential surface of the first rotary member within the working chamber; and

(c) a series of second annular resistance plates alternating with said first resistance plates and also fixedly arranged at axially spaced intervals on an inner circumferential surface of the second rotary member within the working chamber, one of the annular resistance plates of one of said series being formed with a plurality of vortically shaped blades protruding from both side surfaces thereof at the same angular positions, said one resistance plate being located at a central position within the working chamber to agitate the viscous fluid within the working chamber.





5,007,516

MOTOR VEHICLE BRAKING APPARATUS USING ACCELERATOR PEDAL

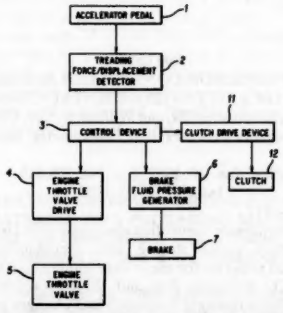
Nagao Miyazaki, Osaka-sayama, Japan, assignor to Japan Electronics Industry, Limited, Osaka, Japan

Filed Aug. 30, 1989, Ser. No. 400,614

Claims priority, application Japan, Oct. 11, 1988, 63-133227; Apr. 15, 1989, 1-96027

Int. Cl.[5] B60K *41/28*

U.S. Cl. 192—0.072 **11 Claims**



1. A motor vehicle braking apparatus for a vehicle having brakes operated by pressure of a brake fluid, an engine throttle valve and an accelerator pedal comprising: a treading force/-displacement detector for detecting a treading force/displacement of the accelerator pedal of the vehicle; and a control device for controlling the engine throttle valve opening degree and the brakes,

said control device being arranged such that:

(i) the accelerator pedal serves as a normal accelerator pedal for increasing the opening area of the engine throttle valve with increase in accelerator pedal treading force/displacement detected value;

(ii) the engine throttle valve is closed when the detector detects a treading force/displacement exceeding a first predetermined treading force/displacement value;

(iii) when the detector detects a treading force/displacement value greater than a second predetermined treading force/displacement value which is greater than said first predetermined treading force/displacement value, the brake fluid pressure is increased or decreased according to the size of the detected treading force/displacement value;

(iv) the brake fluid pressure is released when the treading force/displacement is smaller than said second predetermined treading force/displacement value;

(v) the accelerator pedal is restored to serve as a normal accelerator pedal when the treading force/displacement is smaller than a third predetermined treading force/displacement value near zero, after the throttle valve has been closed in response to the detection of said first value; and

(vi) the engine throttle valve is held closed until the accelerator pedal is so restored to serve as a normal accelerator pedal, following said closing of the throttle valve.

5,007,517

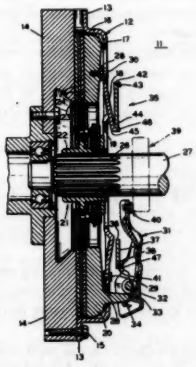
ADJUSTABLE HYSTERESIS DAMPER

Richard A. Flotow, Butler, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 27, 1989, Ser. No. 457,373

Int. Cl.[5] F16D *3/14*

U.S. Cl. 192—106.1 **14 Claims**



1. A clutch driven disc assembly comprising:

a hub;

a facing and disc subassembly mounted on and rotatable relative to said hub; and

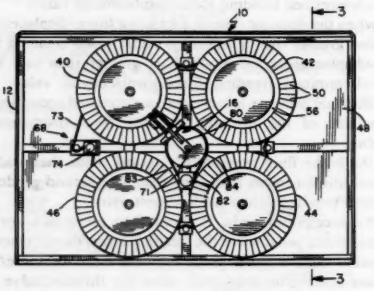
adjustment means mounted on said hub and abutting said subassembly for applying an axial load to said subassembly, said adjustment means threadably engaging said hub for selectively adjusting the axial load.

5,007,518

APPARATUS FOR RENTING ARTICLES

Theodore J. Crooks, La Mesa; Terry L. Zentz, and Matthew G. Morris, both of San Diego, all of Calif., assignors to Sam Crivello, San Diego, Calif.

Filed Feb. 13, 1989, Ser. No. 309,353
Int. Cl.[5] G07F 7/00, 11/52
U.S. Cl. 194—212 12 Claims



4. A videotape rental machine, comprising:

an outer housing;

storage means within the housing having locations for storing a plurality of videocassettes comprising:

a plurality of rotatable drums arranged in a single plane parallel to the front wall of the housing and rotatably mounted on the rear wall of the housing, each drum having a plurality of videocassette storage compartments around its outer periphery;

transport means for retrieving selected videotapes from their storage locations and delivering them to customers, and for retrieving returned videotapes from the customers and returning them to the associated storage locations comprising:

a rotatable picker assembly rotatable in a plane parallel to the front faces of the drums and between the drums and the front wall of the housing between said delivery position and a plurality of pickup positions including a pickup position aligned with a home position corresponding to a storage compartment position on each of the drums; and

drive means for rotating said picker assembly back and forth between said pickup positions and said delivery position and rotating said drums to position predetermined storage compartments at said pickup position; and

control means for controlling operation of said transport means, comprising:

means responsive to entry of a selection code on a selection device to control said transport means to retrieve the selected videotape from its storage location and deliver it to a customer; and

a memory for storing data associating each storage location with a selection code representing a videotape to be stored at that location; the housing having a front panel comprising:

an array of separate display areas each containing pictorial indicia representing a particular videotape stored in the machine and the selection code associated with said particular videotape;

a selection device adjacent to said display area array and associated with said control means for allowing a customer to select a videotape on the selection code associated with that videotape on the selection device; and

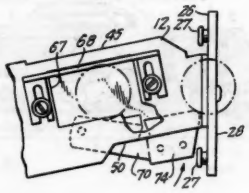
delivery means for delivering videocassettes to customers and receiving returned videocassettes.

5,007,519

COIN DROP CONSTRUCTION

Leonard Mercurio, Dix Hills, N.Y., assignor to Set-O-Matic Sales Corp., Cedarhurst, N.Y.

Filed Jan. 22, 1990, Ser. No. 468,006
Int. Cl.[5] G07F 5/16; G07D 5/04
U.S. Cl. 194—230 7 Claims



1. An improved coin drop construction suitable for replacing the coin slide elements of a coin collector box forming part of a coin operated appliance comprising: a front mounting plate adapted to overlie an opening in said appliance, and a coin guide element carried by an inner surface of said mounting plate and serving to guide inserted coins to said collection box; said guide element including first and second plates interconnected in spaced parallel relation to define an elongated coin channel therebetween, said mounting plate having a coin receiving opening communicating with said channel; a first coin blocking means pivotally mounted between said plates at a first end thereof, said means including a first end located in the area of said coin receiving opening, and having an upper longitudinal edge surface forming a path for conducting a coin therealong; an elongated track member in fixed relation between said plates and having an upper surface forming a continuation of said upper edge of said first coin blocking means when at a lower limit of its path of travel, resilient means bearing upon said first coin blocking means to at least partially block said opening; insertion of a coin through said opening serving to momentarily displace said first coin blocking means downwardly to permit passage of said coin, release of said coin permitting said first coin blocking means to return to its initial position, in which said upper edge is positioned above said upper surface, and said coin is rolled over said edge under the action of gravity to a second end of said track member; a second coin blocking means positioned at said second end of said track member, said second coin blocking means including a pivotally mounted plate forming a continuation of said upper surface of said track member in the presence of an underweight coin, and being pivotally displaced under the weight of a properly weighted coin to allow said coin to fall into said coin collection box.

5,007,520

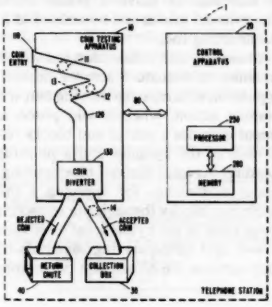
MICROPROCESSOR-CONTROLLED APPARATUS ADAPTABLE TO ENVIRONMENTAL CHANGES

Dawn E. Harris, Indianapolis, and William H. Orr, Carmel, both of Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 20, 1989, Ser. No. 368,619
Int. Cl.[5] G07D 5/08
U.S. Cl. 194—317 12 Claims

8. A microprocessor-controlled electronic coin chute (ECC) having memory means storing coin acceptability criteria within a stored program for use in determining coin denomination, the ECC including first and second oscillators, each having a different resonant frequency that changes in response to the presence of a coin, coin denomination measurements being limited to the measurement of the frequencies of said first and second oscillators, the ECC further including means for changing coin acceptability criteria in accordance with changes in an environmentally-dependent parameter by modi-

fying the stored program in accordance with the frequency of each oscillator measured when the coin is not in the presence



of the oscillating circuits, said parameter being related to the frequency of the oscillating circuits.

5,007,521

METHOD FOR MERGING GOODS AND APPARATUS THEREFOR

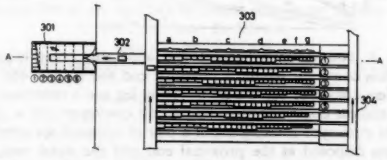
Nobuhiro Tanaka, Miyashiromachi, Japan, assignor to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 344,497, Apr. 27, 1989, abandoned, which is a continuation of Ser. No. 78,394, Jul. 24, 1987, abandoned. This application Jul. 23, 1990, Ser. No. 555,782

Claims priority, application Japan, Jul. 24, 1986, 61-174265; Jul. 24, 1986, 61-174266; Jul. 24, 1986, 61-174267

Int. Cl.[5] B65G *1/00*

U.S. Cl. 198—347.4 **5 Claims**



1. A method of merging goods in a physical distribution system prior to sorting and diverting said goods, comprising the steps of:

(a) picking a unit of goods according to predetermined batch picking data;

(b) counting a number of goods in each unit;

(c) storing goods as a unit, wherein one unit is stored on a single one of a plurality of storage lines;

(d) merging units of goods from each of said plurality of storage lines by changing a speed of carrying out goods from each of said plurality of storage lines according to a size of goods arranged thereon; and

(e) sorting said goods into a plurality of groups based on predetermined dimension data.

5,007,522

APPARATUS FOR TRANSPORTING PACKAGING MATERIAL TO A PACKAGING MACHINE

Heinz Focke, and Oskar Balmer, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed May 31, 1989, Ser. No. 359,302

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1988, 3820735; Aug. 17, 1988, 3827917

Int. Cl.[5] B65G *47/36*

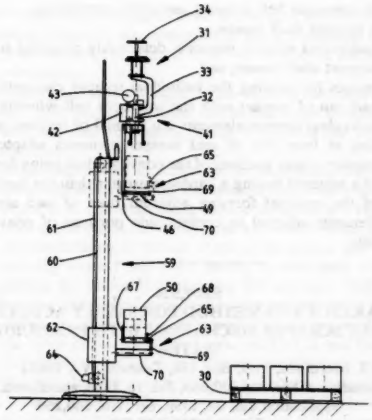
U.S. Cl. 198—468.8 **9 Claims**

1. An apparatus for transporting packaging material, especially reels of web-shaped packaging material, from a stock to at least one reception station in a region of at least one of a plurality of packaging machines, said apparatus comprising:

a plurality of material conveyors (**41**) which are movable along a conveyor track extending above the packaging machines and each of which has a material holder (**44**) with rigid immovable supporting members (**48, 49**) for the positive reception of reels (**26, 27, 28**) of different sizes, the reels resting with their circumferential surface (**50**) on said supporting members (**48, 49**); and

at least one transfer conveyor in the region of a feed station (**38, 39, 40**) and at least one transfer conveyor in the region of a discharge station (**71**), and each having a material carrier (**63, 75**) which is movable upwardly and downwardly for receiving or transferring a reel from or to a material conveyor (**41**);

said material carrier (**63, 75**) being arranged in the region of the conveyor track of said material conveyor (**41**), and the design of said material carrier (**63, 75**) being matched to the design of said supporting members of said material holder (**44**), such that supporting members (**48, 49**), located in the path of upward movement of said material carrier, and said material carrier (**63, 75**) pass one another



during an upward movement of said material carrier, while at the same time a reel is transferred by one transfer conveyor lifting it off the other, wherein said material holder (**44**) comprises rigid supporting struts (**45, 46**) and at least two spaced-apart supporting members designed as unidirectional supporting spars (**48, 49**) having free ends, each of said supporting spars (**48, 49**) projecting from a respective supporting strut (**45, 46**) such that the free ends of said supporting spars are approximately parallel to one another, said supporting spars projecting approximately perpendicular to a direction of movement of said material conveyors (**41**), wherein said material carrier (**63, 75**) has supporting rods (**65, 66; 76, 77**) which pass said supporting spars of said material holder (**44**) during the upward movement of said material carrier, and wherein said supporting rods of said material carrier (**63, 75**) are spaced at a sufficiently different distance that a pair of them can move through the space between said supporting spars of said material holder (**44**), and

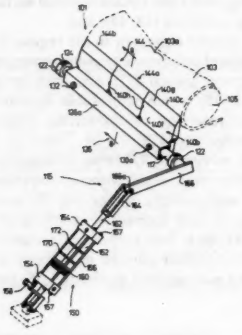
further wherein after a reel is transferred from the material holder (**44**) to the material conveyor (**41**), the reel moves along the material conveyor (**41**) and then the material carrier (**63,75**) moves downwards.

5,007,523

CONVEYOR BELT SCRAPER MECHANISMS

Allen J. Morefield, P.O. Box 534, Tazewell, Va. 24651

Continuation-in-part of Ser. No. 232,663, Aug. 16, 1988, abandoned. This application Mar. 30, 1990, Ser. No. 503,439
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—497 12 Claims



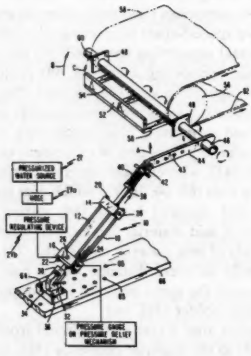
1. A conveyor belt scraping assembly comprising:
a) a support shaft means;
b) individual scraper elements detachably mounted to the support shaft means; and
c) means for moving the individual scraper elements into and: out of contact with the conveyor belt wherein said individual scraper elements are formed of resilient material, at least one of said scraper elements adapted to contact center portions of the conveyor belt being formed of a material having a hardness greater than the hardness of the material forming adjacent ones of said scraper elements adapted to contact side portions of conveyor belt.

5,007,524

APPARATUS AND METHOD FOR SAFELY ACTUATING A BELT SCRAPER MECHANISM WITH PRESSURIZED WATER

Allen J. Morefield, P.O. Box 534, Tazewell, Va. 24651

Continuation of Ser. No. 232,663, Jul. 16, 1988, abandoned. This application Jul. 30, 1990, Ser. No. 560,258
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—499 20 Claims



12. Apparatus for cleaning a moving conveyor belt, comprising:

a belt cleaning mechanism powered by pressurized water for safely actuating the belt cleaning mechanism;

cylinder means for receiving said pressurized water at a pressure sufficient to move a piston slidingly guided within the cylinder means and connected to a force transmitting connecting rod;

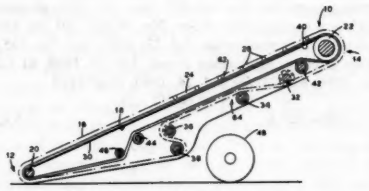
means for connecting said connecting rod to said belt cleaning mechanism to actuate a scraper thereof into a belt cleaning position to scrape the moving belt with a controllable scraping action, wherein said piston and cylinder arrangement includes a pair of end blocks respectively at opposite ends of the cylinder and a plurality of tension rods extending between the end blocks along the sides of the cylinder and means for applying a predetermined force to the end blocks through the tension rods to close off opposite ends of the cylinder, at least said end blocks, cylinder and said piston having materials having water contacting surfaces which are non-corrodible by water.

5,007,525

BELT AND CHAIN FLIGHT CONVEYOR

Richard Crawshay, North Vancouver, Canada, assignor to Inco limited, Toronto, Canada

Filed Aug. 21, 1989, Ser. No. 396,277
Claims priority, application Canada, Oct. 21, 1988, 580997
Int. Cl.[5] B65G *15/44*
U.S. Cl. 198—690.2 6 Claims



1. A conveying apparatus, the apparatus comprising an endless conveyor having a proximal end and a distal end, the endless conveyor being a transporting leg and a returning leg, the endless conveyor including a belt conveyor and a chain flight conveyor rotating about a pair of opposed sprocketless drums disposed at the proximal end and the distal end, the chain flight conveyor parallel to and in superimposed contact with the belt conveyor for a substantial distance along the transporting leg, the width of the belt conveyor being wider than the chain flight conveyor, means for supporting the endless conveyor, and means for causing the endless conveyor to travel in a predetermined direction.

5,007,526

CONVEYOR CURVE AND LIVE ROLLER, LINE SHAFT CONVEYOR SYSTEM INCORPORATING SAME

Francis P. Fazzina, Grand Rapids, and Guy G. Hollister, Spring Lake, both of Mich., assignors to ERMANCO Incorporated, Spring Lake, Mich.

Filed Oct. 5, 1989, Ser. No. 417,290
Int. Cl.[5] B65G *13/02*
U.S. Cl. 198—787 24 Claims

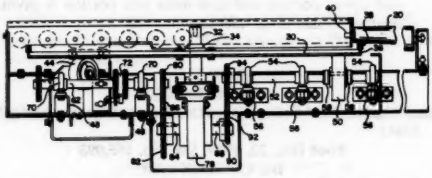
1. A curve for a live roller, line shaft conveyor system, said curve comprising:

a first segment of driven conveyor rollers, said first segment associated with a first drive shaft for driving said first segment of driven conveyor rollers, said first drive shaft extending transversely beneath said first segment;

a second segment of driven conveyor rollers, said second segment associated with a second drive shaft for driving said second segment of driven conveyor rollers, said second drive shaft extending transversely beneath said second segment;

a curve segment of driven conveyor rollers extending beneath and connecting said first segment and said second segment;

a drive disc for driving said curve segment of driven rollers, said drive disc having an annular lip associated therewith and including an edge member thereon, said edge member being positioned against the bottom surfaces of said curve segment of driven rollers to rotate said driven rollers in said curve segment when said drive disc is rotated;



said drive disc being positioned for rotation within a horizontal plane and supported therein by at least one idler wheel and a drive wheel, said idler wheel and said drive wheel retaining said edge member against the bottom surface of said driven rollers in said curve segment to drive said rollers when said drive disc is rotated within said horizontal plane.

5,007,527

PALLET HAVING A SIDEWALL COMPRISING AN ARCUATE SURFACE

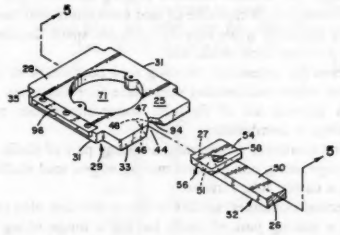
William D. Ach, Brooklyn Park; Edmund J. Anderson, Minneapolis; Lynn B. Behrends, Delano; Wayne P. Desrude, Brooklyn Park, and Gene J. Klos, Minnetonka, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 179,417, Apr. 8, 1988, abandoned. This application Feb. 28, 1989, Ser. No. 316,513

The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.

Int. Cl.[5] B65G *47/00*

U.S. Cl. 198—803.01 **6 Claims**



1. A pallet for carrying a workpiece around a corner portion of a transfer mechanism in a predetermined pallet orientation, said pallet comprising:

(a) a first sidewall having arcuate groove means having a first arcuate surface for cooperating with a curved guide rail at a corner of a pallet transfer mechanism; and

(b) a second sidewall substantially opposite said first sidewall including at least one receiving cavity extending inwardly from said second sidewall angularly downwardly to define a tapered notch forming part of said second sidewall for receiving a tapered end of an engaging bar;

(c) said at least one cavity being configured for imparting vertical and horizontal lift upon engagement with an engaging bar end, said at least one cavity having a generally triangular cross section, a rounded top wall and downwardly dependent side walls, said top wall sloping downwardly from an opening of the at least one cavity to the back of the at least one cavity such that the triangular cross section decreases in area from the opening of the at least one cavity to the back of the at least one cavity.

5,007,528

BELT CONVEYOR SUPPORTING ARRANGEMENT

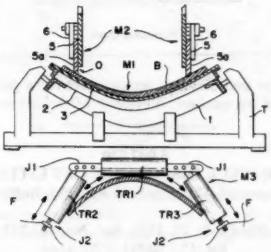
Nagahama Hideharu, Hyogo, Japan, assignor to Yoko Co., Ltd., Hyogo, Japan

Filed Jun. 5, 1989, Ser. No. 361,365

Claims priority, application Japan, Jun. 5, 1988, 63-074917[U]

Int. Cl.[5] B65G *15/08*

U.S. Cl. 198—823 **9 Claims**



1. A supporting arrangement for a conveyor belt movable in a running direction, the arrangement being positioned where bulk materials are transferred from one of a chute and feeder and comprising:

a supporting frame extending in the running direction of the belt, said supporting frame has an arc shape in cross section and said supporting frame extends in the running direction;

a cushioning device mounted on the supporting frame for absorbing impact of bulk materials dropped onto the conveyor belt, said cushioning device comprising a resilient plate mounted on the frame in an arc trough shape generally conforming to the arc shape of the frame; and

a backing contact top plate having a lubricated contact surface for smoothly supporting the conveyor belt, said backing plate being mounted on the resilient plate of the cushioning device in an arc trough shape corresponding to the shape of the plate, the contact surface of said backing plate being provided with a plurality of generally parallel channels having sidewalls and a bottom surface, said channels extend in the running direction of the belt, said channels reducing contact area between the belt and the backing plate and upon movement of the belt in the running direction, an air flow is generated in the channels along the running direction of the belt.

5,007,529

MICROWAVE-HEATABLE AIR-FRESHENER PACKAGE

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Dec. 18, 1989, Ser. No. 452,052

Int. Cl.[5] A61L *9/02;* **A24F** *25/00;* **F16G** *13/00, 11/00*

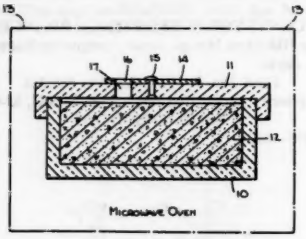
U.S. Cl. 206—0.5 **7 Claims**

1. An air-freshener package activated by microwave energy, said package comprising:

(a) a rigid container whose walls are formed of thermal insulation material having dielectric properties permeable to microwave energy, and having a vent therein; and

(b) a porous pad of dielectric material permeable to microwave energy housed in the container and impregnated with a liquid fragrance which is responsive to microwave energy whereby when the package is irradiated in a microwave over for a relatively short period of time, the liquid fragrance is heated to an elevated temperature to generate an aromatic vapor which when the package is thereafter removed from the oven and placed in a room, is

discharged through the vent into the atmosphere, the thermally insulated container maintaining said liquid fra-



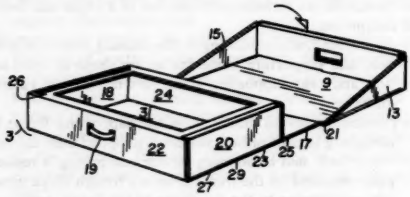
grance at said elevated temperature for a prolonged period after the package is removed from the oven.

5,007,530

SINGLE PIECE DISPOSABLE CAT LITTER BOX

Donald Weismantel, 621 Hapsfield Apt. 106, Buffalo Grove, Ill. 60089

Filed Feb. 23, 1990, Ser. No. 483,763
Int. Cl.[5] B65D *5/20, 5/44*
U.S. Cl. 206—45.210 **2 Claims**



1. A container comprising:

a cover portion comprising an upper surface and a pair of side surfaces projecting downwardly from said upper surface, said upper surface having a rear edge and a forward edge;

a main box portion comprising a front wall, a rear wall, a pair of side walls, each of said walls of said main box portion having an upper surface and a lower surface, said walls defining therebetween a storage volume;

a hinge-member portion having a first end connected to said rear edge of said upper surface of said cover portion, and a second end connected to said lower portion of said front wall of said main box portion;

said cover portion also comprising a front wall, said pair of side surfaces of said cover portion being substantially triangular in shape, each said side surface becoming narrower in height in a direction from said front wall of said cover portion toward said rear edge of said upper surface of said cover portion;

said hinge-member portion comprising a first section, a second section, and a third section, a first fold line between said first and second sections, and a second fold line between said second and third sections; said hinge-member portion being connected to said lower surface of said front wall of said main box portion by said first section, and said hinge-member portion being connected to said upper surface of said cover portion by said third section; said first and third section being pivotally connected to said main box portion and said cover portion, respectively, whereby said hinge-member portion may folded in upon itself for placing the main box portion into the interior of the cover portion after the cover portion has been removed from its closing state on the main box portion;

said main box portion also comprising a lower wall, the upper surface portions of said walls of said main box portion defining an annular shroud;

the container being made of one-piece of flexible material, said cover portion, said main box portion, and said hinge-member portion being formed integrally together;

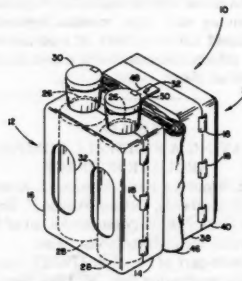
a third fold line at said first end of said hinge-member portion for pivotally connecting said hinge-member portion to said main box portion, and a fourth fold line at said second end of hinge-member portion for pivotally connecting said hinge-member to said cover portion; whereby said cover portion and said main box portion is pivotal relative to said hinge-member portion.

5,007,531

SHOWER KIT

Jimi Lighten, 5311 College Oaks Dr., No. 20, Sacramento, Calif. 95841

Filed Dec. 22, 1989, Ser. No. 455,093
Int. Cl.[5] A47K *5/08*
U.S. Cl. 206—77.1 **20 Claims**



1. A article carrying kit comprising, in combination:

a. a first container comprising a mating pair of shells defining a cavity;

b. a second container, similar in size to the first, also comprising a mating pair of shells defining a cavity;

c. at least one flexible member joining said first and second containers such that one of said containers may be folded over the other while leaving sufficient space therebetween for a folded face cloth; and,

d. means for releasably binding said containers to one another while maintaining said space therebetween.

12. A shower kit of flexible, water-impervious material comprising, in combination:

a. a first container comprising a mating pair of shells having a hinge along one of their mating edges, said shells defining a cavity when mated;

b. a second container, similar in size to the first, also comprising a mating pair of shells having a hinge along one of their mating edges, said shells defining a cavity when mated;

c. at least one flexible strap joining said first and second containers such that one of said containers may be folded over the other while leaving sufficient space therebetween for a folded face cloth; and,

d. means for releasably binding said containers to one another while maintaining said space therebetween.

20. A shower kit of flexible, water-impervious material and of one-piece construction comprising, in combination:

a. a first container comprising a mating pair of shells, said shells defining a cavity when mated, said shells having at least one aperture defined by their mating edges through which the neck of a liquid-retaining receptacle may project, and one of said shells defining an access hole through which a liquid-containing receptacle may be manipulated;

b. a second container, similar in size to the first, also compris-

ing a mating pair of shells, said shells defining a cavity when mated;

c. at least one flexible strap joining said first and second containers such that one of said containers may be folded over the other while leaving sufficient space therebetween for a folded face cloth; and,

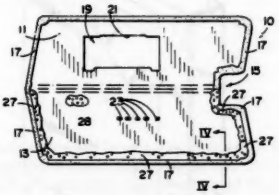
d. means for releasably binding said containers to one another while maintaining said space therebetween.

5,007,532

VISOR AND METHOD FOR MAKING THE SAME

Patrick W. Binish, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Nov. 20, 1989, Ser. No. 439,451
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.1 **42 Claims**



1. An automobile type visor comprising:

a self-supporting relatively thin wall member which is folded to form the core of said visor, said core having abutting edge portions;

a decorative material for covering the outside of said core and having an edge portion turned over the edges of said core into the interior of said core;

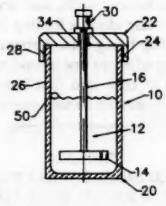
a layer of adhesive within and near said abutting edges of said core for holding said core closed and for adhering to said decorative material.

5,007,533

WET BLADE RAZOR STORAGE APPARATUS

Ahnal A. Purohit, Lisle, Ill., assignor to Anshal, Inc., Darien, Ill.

Filed Mar. 19, 1990, Ser. No. 495,471
Int. Cl.[5] B65D *81/22, 81/24*
U.S. Cl. 206—208 **11 Claims**



1. Apparatus for storing, during nonuse, a wet razor having a blade and a handle cantilevered away from the blade, comprising the combination of

an open-top vessel;

closure means for the vessel;

razor holding means in the vessel operable to releasably hold the razor blade within the vessel spaced below the closure means therefor;

the combination including said vessel being filled with mineral oil to a level above the blade to have the blade submerged in said mineral oil; and

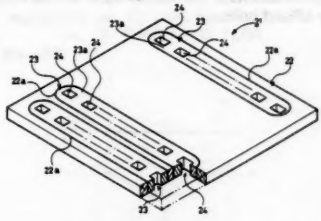
a hygroscopic material contained in the vessel with the mineral oil.

5,007,534

RETAINER FOR CHIP-TYPE ELECTRONIC PARTS

Kuniaki Tamaki; Norio Sakai, and Kenji Minowa, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 27, 1989, Ser. No. 413,334
Claims priority, application Japan, Sep. 27, 1988, 63-242988
Int. Cl.[5] B65D *73/00*
U.S. Cl. 206—329 **4 Claims**



1. A retainer for chip-type electronic parts, comprising

a frame made substantially of rigid material and having a plurality of interior openings defining respective inner walls;

a plurality of respective retainer plate means disposed within said interior openings and having outer edges fixed to said inner walls;

each said retainer plate means comprising an elastic retainer plate having a plurality of retaining holes formed therein, said retaining holes being sized for receiving said chip-type electronic parts, and having inner surfaces which exert an elastic retaining force on said chip-type electronic parts held therein;

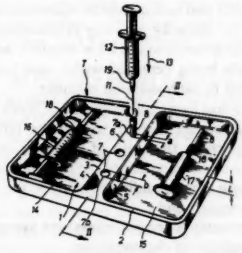
each said elastic retainer plate being made substantially completely of elastic material, and having substantially only such elastic material interposed between said retaining holes.

5,007,535

SYRINGE TRAY

Curt T. Meseke, Leer/Ostfriesl.; Winfried Winkler, Aachen, and Renate Hilbig, Hamm, all of Fed. Rep. of Germany, assignors to Hammerlit GmbH, Leer/Ostfriesland, Fed. Rep. of Germany

Filed Sep. 26, 1989, Ser. No. 412,813
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1988, 8812156[U]; Jul. 13, 1989, 3923119; Aug. 23, 1989, 8910067[U]
Int. Cl.[5] B65D *83/10*
U.S. Cl. 206—366 **18 Claims**



1. A syringe tray for depositing and transporting medical syringes having a hypodermic needle and a cap therefor, including a tray base and further comprising:

means associated with said tray base and including hole

means, with said caps being adapted to be disposed in said hole means in a predetermined manner, said means associated with said tray base comprising at least one raised portion that is in the form of a ridge that extends upwardly from the plane of said tray base and includes a wall that is remoted from said tray base and is provided with said hole means, said ridge having two ends and increasing in width from one end to the other, said hole means being successively disposed holes that increase in diameter from said one end of said ridge to the other, with said increase in width of said ridge corresponding to said increase in diameter of said holes.

5,007,536

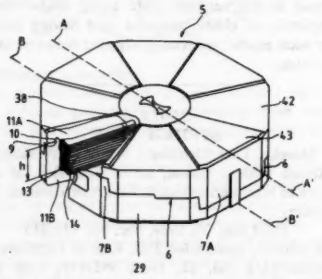
PACKAGING CONTAINER FOR A PLURALITY OF RECORDING MEDIA IN THE FORM OF A CIRCLE

Dietmar Huebner, Oberkirch; Peter Nagel, Willstaett; Ekkehard Hirschberg, Weinheim; Klaus Schoettle, Heidelberg, and Bozidar Pavelka, Willstaett, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 25, 1990, Ser. No. 470,379

Int. Cl.[5] B65D *85/67*

U.S. Cl. 206—394 **14 Claims**



1. A packaging container for a plurality of recording media which, at least after having been wound into roll form, have the shape of flat annular disks and are axially stacked on top of each other between two identical end members each having a skirt portion such that said members when assembled with said skirt portions in mutually abutting relationship, envelop the stack of recording media in the form of a box, said disk-shaped recording media being centered within said box by a central holder provided in each said end member,

said skirt portion having a multitude of teeth extending in a continuous zigzag pattern around the circumference of the skirt portion, the teeth of said two members tightly interfitting upon assembly of the box and the height of the largest tooth corresponding roughly to the internal height of the container, and

said members also having a transverse system of teeth extending radially of the container,

such that the separation line between the two end members is greatly lengthened and both the stability of the container and its protection against the penetration of dust are substantially increased.

5,007,537

SLEEVE FOR A PHOTOPRINT CASSETTE

Peter Ackeret, Kusnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

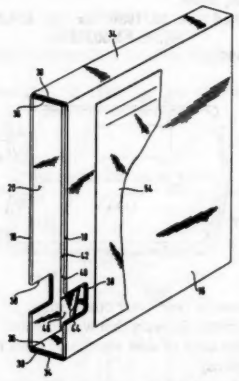
PCT No. PCT/EP87/00374, § 371 Date Jun. 7, 1988, § 102(e) Date Jun. 7, 1988, PCT Pub. No. WO88/00721, PCT Pub. Date Jan. 28, 1988

PCT Filed Jul. 11, 1987, Ser. No. 196,215

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1986, 3624263; Sep. 13, 1986, 3631212

Int. Cl.[5] B65D *85/48*

U.S. Cl. 206—455 **62 Claims**



1. A sleeve for a picture cassette, including a first large side wall, a second large side wall parallel to said first large side wall, a narrow top wall, a narrow bottom wall parallel to said narrow top wall, and a rear wall, said large side walls being interconnected by said top, bottom, and rear walls, front-defining edges of said large side walls and of said top and bottom walls remote from said rear wall defining an open front, one of said large side walls comprising a pocket for holding a flat object, said pocket including a first inner wall portion separating said pocket from a cassette-receiving space, a free edge of said first inner wall portion defining an access opening for free insertion and removal of said flat object into and from said pocket via said open front, said pocket and said access opening extending substantially over an inner height of said sleeve between said top and bottom walls, said first inner wall portion being connected to a flap along a folding line perpendicular to said rear wall, said flap being folded about said folding line so as to lie parallel to an adjacent one of said top, bottom, and side walls and mounted to keep said first inner wall portion in a position substantially parallel to said one large side wall.

5,007,538

INTERLEAVED SPIRAL WRAPPING OF FOAM PRODUCT AND STRETCH FILM FOR PACKAGING CARBONLESS PAPER ROLLS

Roger J. Mushinski; Charles E. Lewis, and Lawrence J. Casey, all of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Division of Ser. No. 21,919, Mar. 4, 1987, Pat. No. 4,884,385. This application Jun. 20, 1989, Ser. No. 369,533

The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.

Int. Cl.[5] B65D *81/14, 85/66*

U.S. Cl. 206—523 **2 Claims**

1. A foam wrap package for protecting a roll of carbonless paper, comprising:

interleaved foam and film wrapped under tension around the outer periphery of roll of paper, said interleaved foam and

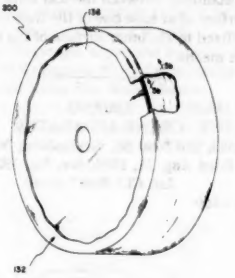
film overlapping edges of and conforming to said roll, said film including a leading edge;

means for attaching said leading film edge to said roll;

first and second end pieces secured to flat side walls of said roll of paper; and

means for holding said first and second end pieces flush to said flat side walls;

said film being supplied from a single source of film and said



foam being supplied from a single source of foam wherein the interleaved layers of foam and film are positioned on said roll of carbonless paper with said film overlapping said foam, said film being stretch film and said foam being a polyolefin packaging foam wherein the foam and film are interleaved to provide three wraps of foam about the periphery of said roll of carbonless paper whereby said foam wrap package may be handled without damaging said roll of carbonless paper.

5,007,539

PACKAGE AND PACKING BODY FOR SMALL COMPONENTS

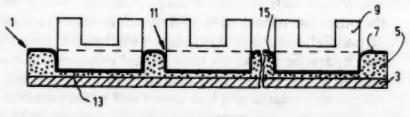
Hans-Werner Rüter, Klein Nordende, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 369,569, Jun. 21, 1989, abandoned, which is a division of Ser. No. 298,191, Jan. 13, 1989, Pat. No. 4,860,521, which is a continuation of Ser. No. 83,545, Aug. 6, 1987, abandoned. This application Apr. 9, 1990, Ser. No. 506,496

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1986, 3626765

Int. Cl.[5] B65D *81/02*; B65B *15/04*

U.S. Cl. 206—524 **5 Claims**



1. A package with small components including a packing body having a multi-layer construction which comprises a substantially rigid base plate and a thermoplastically deformable elastic carrier layer which is fixedly connected to the base plate and which has compartments, each compartment holding an associated small component and corresponding to the shape of its associated small component whereby each such small component is firmly held in place, said package being made in accordance with a method comprising a heating said carrier layer between a temperature in the range of 70° to 180° C., placing a small component on said carrier layer and applying pressure to said small component to press it into said heated carrier layer toward said base plate which forms its associated compartment in said carrier layer, said compartment thereby corresponding to the shape of its associated small component, said carrier possessing the specific property that when said pressure is applied in a prescribed manner the bottom of said compartment immediately adjacent said base plate remains substantially undeformed during the formation of said compartment in said carrier layer.

5,007,540

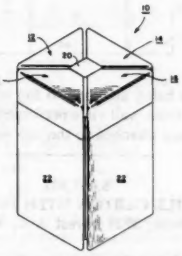
PERSONAL CARE PACKAGE

John C. Beasley, Dallas, Tex., and Pierre F. Dinand, Levallois, France, assignors to Stuart Jacobson Associates, Inc., Dallas, Tex.

Continuation of Ser. No. 179,236, Apr. 8, 1988, abandoned. This application Apr. 17, 1990, Ser. No. 511,974

Int. Cl.[5] B65D *69/00, 21/00*

U.S. Cl. 206—581 **5 Claims**



1. A package of personal care items, comprising:

a plurality of selectively shaped individual containers from which contained personal care commodities can be dispensed;

each of said containers, in section, having a geometrical configuration selected to cooperate with the others of said containers, on being juxtaposed, to effect an arrangement in which said containers, when collectively assembled, complementarily interfit with one another; and

attachment means comprising complementary hook and loop strips on the confronting surfaces of the containers to releasably retain said containers in said juxtaposed relationship.

5,007,541

CARTON FOR GRANULAR MATERIALS

Charles L. Gunn, Lawrenceburg, Ind.; Harold Davis, Reading, Ohio; Milton D. Spahni, Jr., Harrison, Ohio, and Ronald H. Wanless, Lebanon, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 16, 1990, Ser. No. 495,258

Int. Cl.[5] B65D *5/54*

U.S. Cl. 206—611 **20 Claims**

1. A side fill container for housing granular materials comprising:

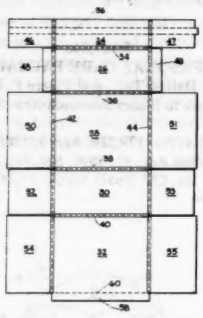
(a) an enclosure including a top wall and a bottom wall opposing each other, a front wall and a back wall opposing each other, and two end walls opposing each other, wherein:

(b) each of the end walls further comprises two main layers attached to each other in face to face relation and having a top edge, a third layer attached in face to face relation to the main layers, and a fourth layer having a horizontal tear strip therein, the fourth layer being attached to the main layers below the tear strip;

(c) the front wall further comprises an inner layer having a top edge and an outer layer, the outer layer having a horizontal tear strip therein which connects with the tear strips of the end walls forming one continuous tear strip, the inner and outer layers being attached to each other below the tear strip;

(d) an ear being attached to each of the end walls above the tear strip and further being attached to the top wall, the

ear holding the top wall against the top edge of the main layers; and



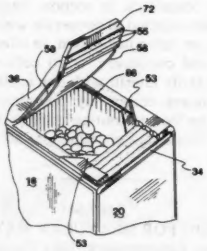
(e) a glue flap being attached to the top edge of the inner layer of the front wall via a perforated score line, the glue flap also being attached to the top wall.

5,007,542

RECLOSEABLE CARTON WITH POURING SPOUT

Harry I. Roccaforte, 3929 Forest Ave., Western Springs, Ill. 60558

Filed Aug. 14, 1990, Ser. No. 567,320
Int. Cl.[5] B65D *5/70*
U.S. Cl. 206—621.6 **14 Claims**



1. A recloseable pouring spout structure for a wall of a carton comprising:

an outer wall panel having inner and outer surfaces and a leader tab therein defined by a pair of parallel tear lines of substantially equal length formed by intermittent cuts through the outer wall panel, each tear line having a first end and a second end, said leader tab further having a finger edge connecting the first ends of said tear lines;

first and second tear areas of substantially equal length formed in said outer wall panel, each said tear area having a first end that adjoins one of the second ends of one of the tear lines and a second end, each said tear area being defined by a partial cut in the inner surface of the outer wall panel and a partial cut in the outer surface of said outer wall panel substantially parallel to and displaced from the partial cut in the inner surface, each of said tear areas extending from its first end to its second end in a direction generally the same as the direction in which the tear lines extend;

an inner wall panel having inner and outer surfaces and a spout opening therethrough with a lead edge, said outer surface of the inner wall panel lying against and affixed to the inner surface of the outer wall panel by adhesive means that substantially encircles the spout opening and extends across the inner surface of the outer wall panel at the leader tab, such that the spout opening is located substantially between the first and second tear areas; and

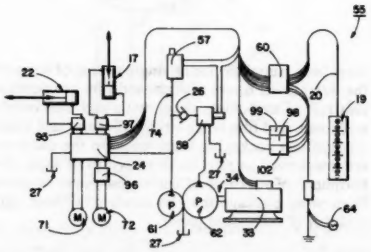
a plurality of parallel, transverse, delamination ribs formed by partial cuts in the outer surface of the inner wall panel adjacent the lead edge of the spout opening, said transverse delamination ribs being located below the inner surface of the leader tab, such that said transverse delamination rib partial cuts are oriented substantially at right angles to the direction of extent of the tear lines and extend substantially between the tear lines and such that the outer surface of at least one of the transverse delamination ribs is affixed to the inner surface of the leader tab by said adhesive means.

5,007,543

CRANE APPARATUS

Mack A. Cooke, 910 Neal St., Greensboro, N.C. 27403

Filed Aug. 21, 1989, Ser. No. 396,077
Int. Cl.[5] B66C *13/40*
U.S. Cl. 212—160 **5 Claims**



1. In a crane apparatus having a base, a turret rotatably mounted on said base for movement about a vertical axis, a hydraulic actuator for rotating said base, a boom with an inside extendable segment and a outside segment, a hydraulic actuator for moving said inside extendable segment relative to said outside segment, means for mounting said boom on said turret, a winch with a lead line, means mounting said winch and said lead line on said boom, a hydraulic actuator for driving said winch, a hydraulic source and circuit therefor, a high volume pump and a low volume pump connected to said hydraulic source, means for driving said pumps, a directional control valve assembly for directing hydraulic fluid from said pumps to said hydraulic actuators, the improvement comprising:

a pendant control device, an electrical cord with first and second ends, said cord being connected to said device at one of said ends and removably connected to said base at the other one of said ends, said device including a plurality of parallel connected two-stage switches for controlling said hydraulic actuators, each of said switches when actuated to a first stage being operative to drive a respective hydraulic actuator at a low speed and when actuated to a second stage being operative to drive a respective hydraulic actuator at a high speed relative to said low speed;

a normally open electrically operated pump unloading valve connected to said high volume pump and a normally closed pressure switch connected in series with said electrically operated unloading valve;

each of said two-stage switches when actuated to said first stage being operative to place said directional control valve assembly in fluid communication with only said low volume pump to drive a selected hydraulic actuator at said low speed;

each of said two-stage switches when actuated to said second stage being operative to close said unloading valve to place said directional control valve assembly in fluid communication with said high volume pump whereby said low volume pump and said high volume pump are

concurrently operated to supply fluid to a selected hydraulic actuator to drive it at said high speed; and

said pressure switch being operative to open said unloading valve in response to a predetermined pressure in said hydraulic circuit when a hydraulic actuator is driven at high speed to prevent the stalling of said means for driving said pumps.

5,007,544

MECHANISM FOR SUPPRESSING DISPLACEMENT OF TRAVELLING CRANE

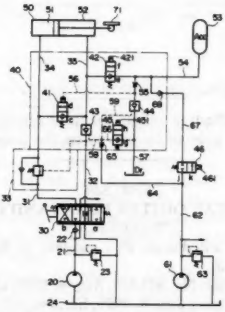
Yoshimi Saotome, Takasago; Kiyotsuna Kuchiki, and Norihiko Hayashi, both of Kakogawa, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 6, 1990, Ser. No. 505,401

Claims priority, application Japan, Sep. 9, 1989, 1-234055

Int. Cl.[5] B66C *23/26, 13/06;* F16D *31/62*

U.S. Cl. 212—265 **4 Claims**



1. A mechanism for suppressing the displacement of a travelling crane, including:

a wheeled supported car body; a boom pivotally supported on said car body;

a hydraulic cylinder with first and second oil chambers for raising and lowering said boom, said hydraulic cylinder being connected between said body of the travelling crane and the boom;

a main hydraulic pump;

a direction control valve for controlling oil from said main hydraulic pump selectively with respect to said first oil chamber which functions to maintain the load of said hydraulic cylinder and to said second oil chamber located on the side opposite to said first oil chamber;

a displacement suppressing accumulator connected between said cylinder and said direction control valve;

a mode change-over valve mechanism selectively operable in either a crane travelling mode position in second oil chambers and said accumulator being in fluid communication with one another and a crane operation mode position in which said communication is cut off and pressure oil is supplied to or discharged from said first and second oil chambers independently;

a mode selection switch for selecting a mode position for said mode change-over valve mechanism;

a boom position detecting means;

an auxiliary pressure oil source;

a change-over valve for controlling said auxiliary pressure oil source, said change-over being selectively shiftable between a first position in which said auxiliary pressure oil source is in communication with said first oil chamber of said cylinder and to a second position to which said communication is cut off; and

a control means operable to shift said change-over valve to said first position to supply a predetermined amount of oil to said first oil chamber of said cylinder from said auxiliary pressure oil source when said mode selection switch is in the crane travelling mode position and a detected value by said boom position detecting means is smaller than a predetermined lower limit value of a selected boom travelling range.

5,007,545

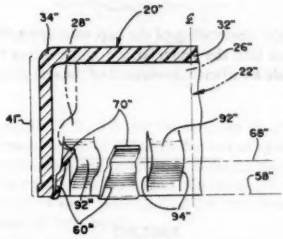
REMOVAL RESISTANT MEMBER

Leo R. Imbery, Jr., Crystal Lake, Ill., assignor to Seaquist Closures, Crystal Lake, Ill.

Filed Mar. 15, 1990, Ser. No. 494,238

Int. Cl.[5] B65D *47/02*

U.S. Cl. 215—14 **1 Claim**



1. A mounting member for being mounted to a container that has an exterior surface portion and an annular bead projecting from the circumference of said surface portion, said mounting member comprising:

a skirt for being disposed around said container exterior surface portion with at least a first annular section of the skirt extending axially on one side of said container annular bead, said first annular section of said skirt defining a plurality of circumferentially spaced-apart inwardly convex lugs for engaging said annular bead of said container;

extension means for extending from the peripheral edge of said first annular section;

first flexible connecting means for connecting said extension means to said skirt first annular section at a first bend region to accommodate radially inward movement of said extension means to an orientation generally alongside said skirt first annular section;

a plurality of circumferentially spaced tabs each extending from and radially inwardly of said extension means; and

second flexible connecting means for connecting each said tab to said extension means at a second bend region to accommodate radially inward pivoting of each said tab toward said container when sufficient relative axial displacement is effected between said mounting member and container to engage said container annular bead with the distal end of said tab and thereby resist further axial displacement.

5,007,546

BOTTLE CAPS

Howard Rose, St. Helen's, and Ian G. C. McAffer, Westerham, both of Great Britain, assignors to Waverley Pharmaceuticals Limited, Great Britain

Filed Mar. 14, 1989, Ser. No. 322,901

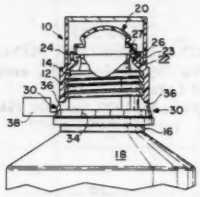
Claims priority, application United Kingdom, Jul. 14, 1987, 8716514

Int. Cl.[5] B65D *1/02*

U.S. Cl. 215—32 **10 Claims**

1. A bottle cap for use with moulded plastics bottles which have an integral flanged seal over the aperture of the threaded neck, a frangible membrane joining the seal to the neck, the cap having a complementary screw-thread to that of the neck and at least two inwardly projecting resilient members located above the screw-thread such that, when the cap is screwed onto the bottle, the members pass around the seal with resilient deformation and, on unscrewing the cap, engage the flanged

seal in a lifting action, characterized in that at least one of the inwardly projecting members comprises an upwardly directed blade, adapted to engage an undersurface of the flanged seal,



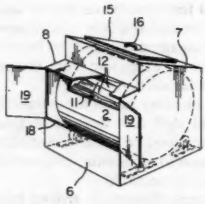
such that upon unscrewing of the cap, said upwardly directed blade will cut into the undersurface while lifting the flanged seal to provide an efficient severance of the seal from the bottle neck.

5,007,547

MULTI-PORT CONTAINER

Seguard Corbett, 2nd Floor, 839 - 5th Avenue S.W., Calgary, Alberta, Canada T2P 3C8

Filed Jun. 2, 1989, Ser. No. 360,525
Int. Cl.[5] B65D *88/54*
U.S. Cl. 220–581 **12 Claims**



1. A multi-port container comprising housing means; first and second openings in separate walls of said housing means permitting access to the interior thereof; drum means for receiving material in said container; a third opening in said drum means for loading said drum means or removing material therefrom; and roller means supporting said drum means for rotation in said housing means, whereby said drum means can be rotated to align said third opening with said first or second opening to permit loading and unloading of said drum means at different locations on said housing means.

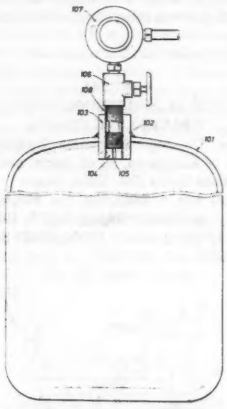
5,007,548

GAS CYLINDER SAFETY DEVICE

Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 26, 1990, Ser. No. 557,819
Int. Cl.[5] F16K *17/00*
U.S. Cl. 220—3 **12 Claims**

1. In a pressure vessel capable of storing fluids under pressure comprising a shell and a channel formed through the shell for fluid to flow into or out of the vessel wherein unrestricted flow out of the vessel through the channel could exert a force on the vessel which exceeds the empty weight of the vessel, the improvement being a means internal to the vessel to restrict flow through the channel from the vessel, the means to restrict



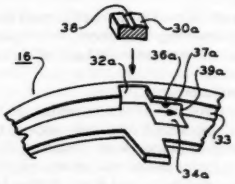
the flow being effective to limit the force exerted on the vessel to less than that exerted by gravity on the pressure vessel.

5,007,549

ELECTRICAL OUTLET BOXES AND COVERS THEREFOR

Eugene J. Suk, Pittsburgh, Pa., assignor to Industries, Inc., Livingston, N.J.

Continuation of Ser. No. 347,180, May 4, 1989, abandoned. This application Jun. 8, 1990, Ser. No. 535,290
Int. Cl.[5] H02G *3/14*
U.S. Cl. 220—3.8 **10 Claims**



1. An apparatus for covering an electrical outlet box, comprising:

a ring, said ring being capable of being fitted within the interior of said electrical outlet box, said electrical outlet box having a diameter, and said ring including an inner wall and an outer wall, wherein said inner wall includes at least one first groove means, said at least one first groove means being bounded by at least one wall portion, said at least one wall portion having at least one protruding portion extending from said at least one wall portion; and

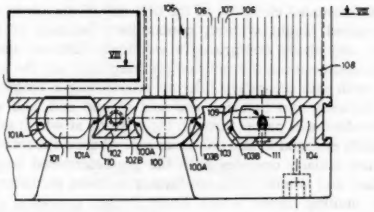
a cover, said cover including a top portion, said top portion having a diameter greater than that of said electrical outlet box and of said ring, and a downwardly depending circular portion, said downwardly depending circular portion including at least one tab means projecting from said downwardly depending circular portion, said at least one tab means including at least one second groove means, said at least one tab means capable of being received by said at least one first groove means, said at least one tab means capable of interlocking with said at least one first groove means and said at least one second groove means capable of mating and interlocking with said at least one protruding portion upon rotation of said cover relative to

said ring, thereby enabling said downwardly depending circular portion to mate with said ring.

5,007,550
CONTAINER

Jean-Pierre Avot, les Loges en Josas, France, assignor to Sonabat-Chantal - a French Society, de Bretagne, France

Filed Aug. 15, 1989, Ser. No. 393,939
Claims priority, application France, Aug. 16, 1988, 88 10920
Int. Cl.[5] B65D *6/16*
U.S. Cl. 220—8 **3 Claims**



1. A container of adjustable width including a base, a back, a front edge and two side walls,

Said container formed by two elements (**1, 2**) each including one of said side walls (**3, 13**) bounded by part of the back (**4, 14**) and part of the base (**5, 15**),

the back parts (**4, 14**) and the base parts (**5, 15**) of the two elements (**1, 2**) overlapping each other telescopically to enable the width (L) of the container to be adjusted by the movement of the two elements (**1, 2**) towards or away from each other,

the base parts (**5, 15**) and the back parts (**4, 14**) of each element (**1, 2**) formed with fingers leaving intervals between them, the fingers and intervals having similar configuration in cross-section so that the shape of the fingers correspond to the shape of the intervals,

the fingers of one of said elements (**1, 2**) sliding into the intervals between the fingers of the other of said elements (**2, 1**), wherein

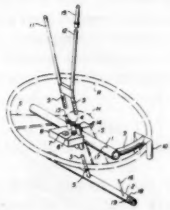
the fingers of the one element have rounded convex sides and flat upper surfaces, while the fingers of the other element have rounded concave sides and flat upper and lower surfaces, the contact between the concave and convex surfaces provides an interlocking engagement of the elements that restricts movement perpendicular to the telescopic movement.

5,007,551
RECEPTACLES DESIGNED TO ENABLE THEIR JUXTAPOSITION

Stefan Baroï, 40, Chemin de la Chevillarde, 1208 Geneva, Switzerland

PCT No. PCT/CH88/00030, § 371 Date Sep. 27, 1988, § 102(e) Date Sep. 27, 1988, PCT Pub. No. WO88/06132, PCT Pub. Date Aug. 25, 1988
PCT Filed Feb. 8, 1988, Ser. No. 278,941
Claims priority, application France, Feb. 12, 1987, 87 02176
Int. Cl.[5] B65D *21/02*
U.S. Cl. 220—23.4 **16 Claims**

1. Juxtaposable containers, each consisting of a hollow modular cell comprising at least one neck and at least one recess serving as a receptacle for an identical neck of another cell, each modular cell being connectable to at least one other modular cell, wherein each neck and each recess are equipped with matching snapping means, and wherein these means are activated as a result of the engagement of a neck of one cell into a recess of the juxtaposed cell, wherein the modular cells are cubic, wherein at least one face is equipped with a neck (**2, 2', 2''**), and wherein at least one other face is equipped with a recess (**3, 3', 3''**), the outer dimensions of the necks corresponding to the inner dimensions of the recesses, and the necks and recesses being concentric with the geometrical center of the faces of the cube which are equipped with them, wherein the neck (**2, 2', 2''**) and the recesses (**3, 3', 3''**) are truncated cones, and wherein the height (h) of the necks is identical to the depth (h') of the recesses, wherein the generatrix (a) of the cone in

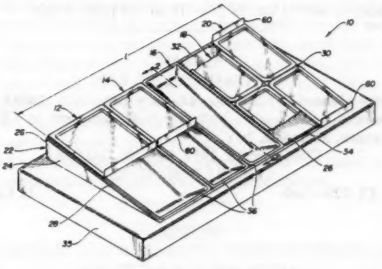


which the necks (**2, 2', 2''**) and the recesses (**3, 3', 3''**) are inscribed forms an angle of 45° with the axis of symmetry (XX, YY) with which they are concentric, wherein the faces (**10**) of each container are joined by means of a bevel (p), and wherein a generatrix (a) of each neck (**2, 2', 2''**) is inscribed in the geometrical plane of each bevel.

5,007,552
SERVING BAR AND CONTAINER FOR FOOD

Daniel E. Sage, Dayton, and James C. Patrick, Jr., Troy, both of Ohio, assignors to Ponderosa Corporation, Dayton, Ohio

Filed Dec. 11, 1987, Ser. No. 131,567
Int. Cl.[5] A47F *5/00*
U.S. Cl. 220—23.83 **11 Claims**



1. A container for food adapted for being seated, with similar containers, in a serving bar having a substantially rectangular opening for receiving said containers and a substantially rectangular upper edge at the periphery of the opening, opposing edges of said upper edge supporting said container and one edge being higher than the other to elevate one end of said container, said container comprising:

a pan having a bottom, a first and second set of opposing sidewalls extending therefrom to an opening and defining a compartment for holding the food, and lips extending outwardly from said sidewalls of said first set for engaging the edges of the serving bar; and,

a first cover engageable with the periphery of one end of said pan adjacent said opening for closing a portion of said opening adjacent the elevated end of said pan; said first cover comprising a body engageable with the periphery of one end of said pan, a flange extending generally perpendicularly from one end of said body and latchable with either one of said lips of said pan, and a ledge extending generally perpendicularly from the other end of said body in a direction opposite to that of said flange of said first cover.

5,007,553

CONTAINER FOR A PAINT BRUSH

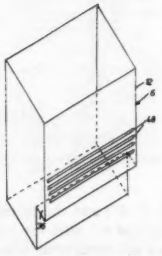
Lee J. Curtis, 74 Patshull Road, London NW5 2LD, England

Filed Jan. 4, 1990, Ser. No. 461,052

Claims priority, application United Kingdom, Jan. 13, 1989, 8900773

Int. Cl.[5] A45D *44/18*; B65D *25/00*; A47L *13/56*

U.S. Cl. 220—90 7 Claims



1. A container for a paint brush, which container comprises a body and a lid, the body having a base and a walled portion which upstands from the base, the lid having an aperture through which a handle of the paint brush passes and slits which extend from the aperture and which enable parts of the lid defining the aperture to grip the handle of the paint brush adjacent the aperture whereby, when the lid is on the body, the handle of the paint brush can extend beyond the lid and a brush part of the paint brush can be suspended in the body above the base of the body, the walled portion of the body having an inwardly projecting integrally formed shelf on which to rest the paint brush inside the body when the lid is not on the body, and the walled portion of the body also having integrally formed ribs which extend parallel to the base and which are for facilitating wiping excess paint from the paint brush.

5,007,554

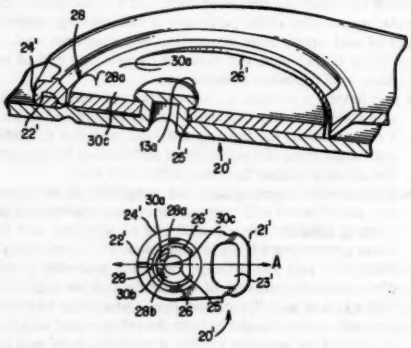
CONTAINER LIFT TAB

Charles Hannon, 27 Sargent Rd., Scarsdale, N.Y. 10583, and Leonard J. Vallender, Valhalla, N.Y., assignors to Charles Hannon, Scarsdale, N.Y.

Filed Apr. 25, 1989, Ser. No. 343,046

Int. Cl.[5] B65D *41/32*

U.S. Cl. 220—269 11 Claims



1. A lift tab, for fulcrum opening of a top of metal container, comprising an elongated metal member having means for fixed engagement of a portion of the tab to the metal container top; wherein with said tab being fixedly engaged to said container top, said tab comprises first and second ends located on opposite sides of the fixed engagement portion, with the second end adapted to partially overlap a weakened section of the container top, and said tab further comprising a fulcrum pivoting area between the fixed engagement portion and the second end, whereby elevation of the first end causes the tab to swivel through the pivoting area with the second end being forced into pushing engagement with the weakened section of the container top thereby causing the weakened section to tear open, characterized in that the tab further comprises means to permit increased elevation of the first end of the tab to a predetermined height without concomitant increase in lifting force, said means comprising a secondary fulcrum operably positioned between the fulcrum pivoting area and the second end, with said secondary fulcrum intersecting a longitudinal axis between said first end and said second end, and which longitudinal axis passes through the position at which said tab is fixedly engaged to said container top, wherein the secondary fulcrum initially operates until the pre-determined height is reached and whereby the tab further includes secondary fulcrum limiting means which limits further operation of the fulcrum pivoting area for causing the tearing open of the weakened section of the container top, wherein the means to permit increased elevation comprises a lanced line positioned between the fulcrum pivoting area and the second end, with the lanced line intersecting said longitudinal axis.

5,007,555

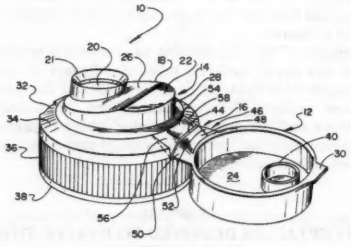
BIASED HINGE CAP

James M. Beck, Carol Stream, Ill., assignor to Creative Packaging Corp., Wheeling, Ill.

Filed Dec. 19, 1989, Ser. No. 452,427

Int. Cl.[5] B65D *47/08*

U.S. Cl. 220—339 16 Claims



1. A hinge closure comprising:

a cap body portion adapted to be secured to a container having a dispensing opening therein, said cap body portion including a top portion raised above a shoulder and including a periphery therearound, said cap body including a mating portion;

a lid hinged to said cap body by a solid one-piece unitary hinge member integrally formed between said cap body and said lid, said hinge member being attached on one side directly to said lid and on an opposite side to said cap body by a film hinge and including a central planar portion; and

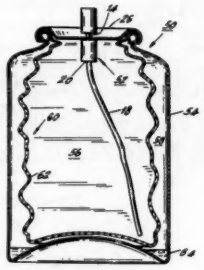
said hinge member including a side shoulder depending from either side of said central planar portion of said hinge member when said lid is in its opened position and being attached on one end directly to said lid and on an opposite end to said cap body by said film hinge so that a snap is provided in said side shoulders during operation of said hinge member and said side shoulders mate with said mating portion of said cap body in a closed position of said lid.

5,007,556

METERING DISPENSER

Myron J. Lover, Mountainside, N.J., assignor to Block Drug Company, Inc., Jersey City, N.J.

Filed Apr. 18, 1990, Ser. No. 510,681
Int. Cl.[5] B65D *83/14*
U.S. Cl. 222—386.5 10 Claims



1. A dispenser, comprising:

(A) a container for containing fluid to be dispensed;

(B) a metering valve connected to said container, said metering valve comprising:

(a) a metering chamber;

(b) a valved inlet for introducing a metered dose of the fluid into said metering chamber when said valved inlet is open; and

(c) a valved outlet for dispensing the metered dose from said metering chamber when said valved inlet is closed; and

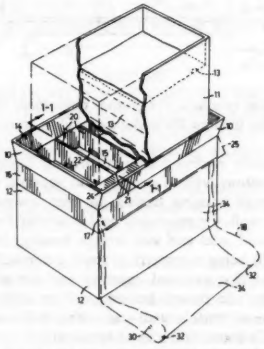
(C) a barrier for pressurizing the fluid so that substantially no vapor or gas remains within said metering chamber when said valved inlet is open.

5,007,557

SPILL CONTAINER WITH UNFOLDING FLEXIBLE COMPARTMENT

James Spence, 310 Blantyre Avenue, Scarborough, Ontario, Canada M1N 2S7

Filed Mar. 19, 1990, Ser. No. 495,806
Int. Cl.[5] B65D *25/02*
U.S. Cl. 220—571 19 Claims



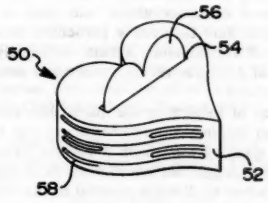
1. A spill container adapted for use in conjunction with a leak susceptible fluid container, said spill container comprising a receptacle for receiving leaking fluid, and a foldably flexible water-proof compartment openly connected to the receptacle for receiving a flow of fluid therefrom, the receptacle comprising a containing wall defining a hollow fluid-trapping vessel, a first opening for receiving leaking fluid, and a second opening connecting the receptacle to the flexible water-proof compartment, the flexible water-proof compartment comprising a base portion, a side wall portion and a third opening sealably continuous with the second opening, said flexibly water-proof compartment storable in a retracted fluid-receiving position adjacent to the receptacle and unfoldably responsive without human intervention to a fluid pressure exerted through the second opening by a fluid column in the receptacle, whereby said spill container is adapted to extend to accommodate an accidental leak of volume exceeding the fluid volume of the receptacle without spillover from the receptacle.

5,007,558

ORNAMENTALLY-SHAPED, INTERFOLDED PAPER PRODUCTS

Joyce Allen, 17671 Rowe, Detroit, Mich. 48205, and Kathy M. Bonner, 17679 Rowe, Detroit, Mich. 48205

Filed May 13, 1988, Ser. No. 193,570
Int. Cl.[5] B65H *1/00*
U.S. Cl. 221—48 4 Claims



1. A dispenser for interfolded tissue product comprising:

a sheet material assembly of discrete, ornamentally-shaped forms consisting of a non-polygonal perimeter and including at least one curvilinear portion with interfolded webs including half-web folds which are interfolded with themselves and with previous, upstream folded webs, and packed in a box dispenser having a single opening therein for pop-up removal of individual discrete sheets of ornamentally-shaped tissue paper,

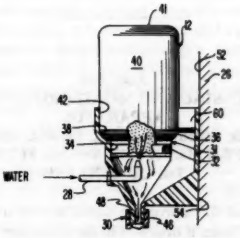
said box dispenser having a like shape to the shape of the ornamentally-shaped forms contained therein.

5,007,559

METHOD AND APPARATUS FOR DISPENSING A PARTICULATE MATERIAL

Cecil B. Young, 7411 Rhondda Dr., Lorton, Va. 22079

Continuation of Ser. No. 887,593, Jul. 21, 1986, abandoned. This application Jun. 1, 1989, Ser. No. 361,692
Int. Cl.[5] B67B *7/00*
U.S. Cl. 222—1 20 Claims



1. A method for dispensing detergent to a washing machine comprising:

(a) forming a container from plastic material with a shoulder

and a neck portion integral therewith prior to insertion of detergent therein;

(b) placing the detergent in particulate form within a container, said container having a mouth for receiving the detergent;

(c) covering the container mouth with a cover material which is impermeable to particulate matter while permitting passage of water, said covering step being made prior to delivery of said container to said washing machine;

(d) said washing machine having an exterior portion and an interior portion, said washing machine having an inlet connected to said interior portion for receiving the detergent, said inlet being in communication with a fixed receptacle facing upwardly, said receptacle having a complementary portion for engaging said container mouth;

(e) delivering said container to the vicinity of said washing machine;

(f) arranging said container with respect to said receptacle to form a closed path between the container and said inlet, said particulate matter being supported above the inlet by said cover material, within the container and exposed to said inlet;

(g) subjecting said particulate material while supported within said container above said inlet to controlled amounts of fluid to dissolve particulate material in the vicinity of the container mouth sufficiently to permit passage of detergent through said cover material and to said inlet; and

(h) the step of subjecting said particulate material while supported within said container above and said inlet including spraying fluid from a position exterior to said container through said cover material to said mouth of said container to dissolve material in the vicinity of the mouth in the lower portion of the container while detergent in the upper part of the container remains substantially dry.

9. A container for dispensing detergent in particulate form for use with a washing machine having a complementary receptacle comprising:

(a) a hollow body portion containing particulate detergent therein:

(b) said container having a shoulder portion and a neck portion integral therewith, said shoulder portion and said neck shaped to cooperate with said receptacle to form a substantially closed path therebetween;

(c) a mouth connected to said neck portion to permit access to the interior of the container; and

(d) said mouth being covered by a cover material impervious to the particulate detergent while being pervious to a fluid sprayed through said cover from a position exterior of said container for dissolving said detergent sufficiently to pass through said cover of the wire mesh, said cover material being fixed to said container independently of said receptacle.

5,007,560

BEER DISPENSING AND MONITORING METHOD AND APPARATUS

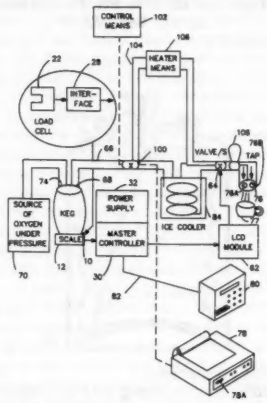
John J. Sassak, 36855 Schoolcraft, Livonia, Mich. 48150

Filed Mar. 1, 1989, Ser. No. 317,584
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—1 **16 Claims**

1. A method for delivering liquid beer to a container such that a head of foam is disposed in the container, comprising the steps of:

delivering a first part of the liquid beer at a non-foaming temperature to a dispensing location;

delivering a second part of the liquid beer at a greater, foaming temperature to the dispensing location;



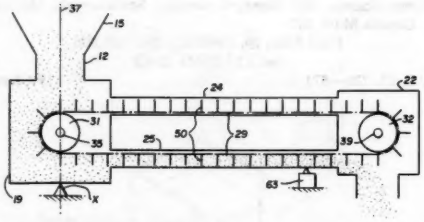
dispensing the first and second parts of the liquid beer to the container such that a head of foam forms on the liquid beer in the container.

5,007,561

NON-FLOODING SET RATE FEEDER

Richard C. Wahl, Essex Falls, and Ralph J. Winters, Nutley, both of N.J., assignors to Vibra Screw, Incoporated, Totowa, N.J.

Continuation of Ser. No. 13,943, Feb. 12, 1987, abandoned. This application Feb. 2, 1990, Ser. No. 474,216
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—55 **17 Claims**



1. Apparatus mounted for pivotal movement about an horizontal axis for feeding fluid-like particulate material comprising:

a substantially enclosed trough housing having side walls and a bottom wall to contain and support said material, said trough housing having an inlet spaced above said bottom wall for receiving said material from a supply means, said inlet and said trough housing including said side walls being symmetrical about a vertical axis of symmetry so that material entering and contained and enclosed by said trough housing will be uniformly distributed on said bottom wall and within said trough housing side walls about said axis of symmetry,

an outlet means having an exit opening for discharging the material,

a first tube member interconnecting said trough housing and said outlet means,

a series of connected pusher means movable into said trough housing and through said material contained in said en-

closed trough housing and out of said trough housing into said first tube member for moving material in a uniform quantity from said trough means to said outlet means,

a variable speed control motor coupled to said pusher means through a first pulley,

displacement means for measuring a displacement from the horizontal of said apparatus and for producing an output signal corresponding to said displacement, and

control means responding to said output signal for regulating the speed of said motor.

5,007,562

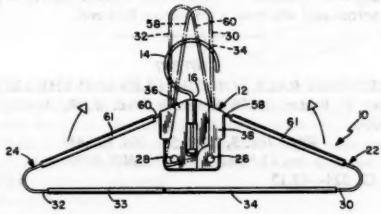
COLLAPSIBLE CLOTHES HANGER

Joyce Brink, and James E. Brink, both of 1142 Bobolink Dr., Vista, Calif. 92083

Filed Jul. 10, 1989, Ser. No. 377,279

Int. Cl.[5] A47G *25/42, 25/40, 25/16*

U.S. Cl. 223—89 **14 Claims**



12. A collapsible clothes hanger, comprising:

a central support bracket;

a suspending member extending in a first direction from the support bracket for suspending the hanger from a support;

first and second hanger arms pivotally mounted on said support bracket for movement between a first, extended position in which they extend in generally opposite directions away from said support bracket and angled downwardly relative to said suspending member, and a second, collapsed position in which they extend generally parallel to one another upwardly in said first direction from said support bracket in the same direction as said suspending member;

said support bracket including releasable retaining means for releasably retaining portions of said hanger arms in both said extended and collapsed positions; and

said support bracket having oppositely directed channels comprising said releasable retaining means for receiving portions of said hanger arms in both said positions, said hanger arm portions being a snap fit in said channels.

5,007,563

DISPENSING HEAD FOR AN ADDITIVE PRODUCT FOR MOUNTING ON A RECEPTACLE AND A RECEPTACLE EQUIPPED WITH SUCH A HEAD

Vincent de Laforcade, Clamart, France, assignor to L'Oreal, Paris, France

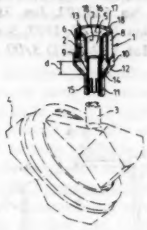
Filed Nov. 7, 1989, Ser. No. 432,854

Claims priority, application France, Nov. 9, 1988, 8814644

Int. Cl.[5] B67D *5/56;* **B65D** *25/40*

U.S. Cl. 222—145 **12 Claims**

1. A dispensing head for an additive with the head having means for attachment to an outlet of a container for a product of the type that is dispensed in the form of a foam or a paste, said head having first wall means defining a central conduit having at one end said means for attachment, second wall means disposed about said first wall means to define a chamber for the additive, aperture means for dispensing the additive from said chamber, said aperture means disposed on a top wall of said chamber opposite to said end of said conduit, said chamber having an opening in communication with said central conduit, tube means slidably disposed relative to said central conduit and movable between a storage position wherein said opening of said chamber is closed by said tube means, and



another position, wherein said opening of said chamber is unobstructed.

5,007,564

DOSING OR FEEDING APPARATUS FOR PRECISELY FEEDING LOOSE BULK MATERIAL

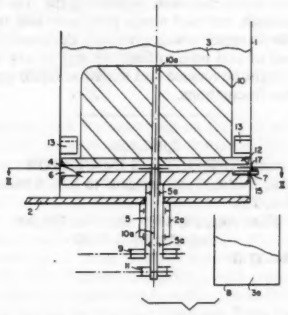
Matthias Beth, Griesheim; Hansgeorg Binz, Eschborn, and Ludger Toerner, Eppertshausen, all of Fed. Rep. of Germany, assignors to Carl Schenck AG, Darmstadt, Fed. Rep. of Germany

Filed May 25, 1989, Ser. No. 357,311

Claims priority, application Fed. Rep. of Germany, May 30, 1988, 3818338

Int. Cl.[5] G01F *13/00*

U.S. Cl. 222—217 **16 Claims**



1. A dosing or feeding apparatus for feeding precisely measured portions of loose bulk material, especially powdered or fine grained material, comprising a cylindrical container for storing said bulk material, rotating turntable means arranged for substantially closing a bottom end of said cylindrical container, said turntable means comprising a discharge groove having a defined vertical cross-sectional groove area, said discharge groove being arranged around said turntable next to its circumference, said discharge groove opening radially outwardly, drive means arranged for rotating said turntable means, a discharge opening in said container, and stripper means reaching into said discharge groove through said discharge opening, said stripper means being so dimensioned and positioned that said stripper means substantially completely cover said vertical cross-sectional groove area for stripping said precisely measured portions of bulk material out of said groove through said discharge opening with each revolution of said turntable.

5,007,565

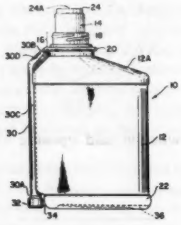
INTEGRAL VENT TUBE

Simon J. Richter, Marietta, Ga., and Frank G. Hohmann, Denville, N.J., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 623,192, Jun. 21, 1984, abandoned. This application Jan. 13, 1987, Ser. No. 2,991

Int. Cl.[5] B67D *3/00*

U.S. Cl. 222—481 **38 Claims**



1. A disposable package for dispensing liquids with a controlled rate of flow comprising:

a container having a base end and a discharge end opposite thereto, sidewalls extending from said base end toward said discharge end and a neck connecting the sidewalls to the discharge end and defining a discharge opening through which liquids may be dispensed; and

a flow rate control tube having an openable, sealed end and an open end, the tube having the openable, sealed end thereof disposed in the container base end and a major portion extending substantially longitudinally of said container on the outside of said sidewalls, said tube having a minor portion connecting said major portion to said open end of said tube at the container neck, said open end communicating through said neck with the inside of said container, said major portion of said tube having a predetermined inside diameter, permitting the free flow of air therethrough, and said minor portion of said tube having an inside diameter which gradually decreases toward the open end of said tube to limit the size of any air bubbles which might be formed and minimize liquid pressure and flow rate fluctuations.

5,007,566

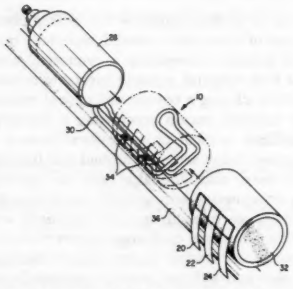
WATER BOTTLE INSULATOR

Larry D. Fick, Dallas, Tex., assignor to New Visions Corporation, Dallas, Tex.

Filed Aug. 24, 1989, Ser. No. 398,009

Int. Cl.[5] B62J *7/00*

U.S. Cl. 224—32 R **17 Claims**



1. A bicycle water bottle insulator, comprising:

a substantially cylindrical sidewall sized to be fit around a bicycle water bottle cage and having an insulating layer;

a bottom having an insulating layer and a peripheral margin, a bottom margin of said cylindrical sidewall affixed to said peripheral margin, said cylindrical sidewall having a top margin opposed to said bottom margin;

said cylindrical sidewall having a slit longitudinally extending from said top margin toward said bottom margin for permitting said insulator to be fitted around a bicycle water cage and a bicycle water bottle, said bicycle water bottle cage having attachments for positioning said cage on a bicycle frame, said slit of said sidewall adapted to receive said attachments;

a plurality of transverse straps having first ends affixed to said cylindrical sidewall and spaced from each other, said straps longitudinally positioned so that when said insulator is fit around said bottle cage and said attachment bolts are received into said slit, said straps are longitudinally displaced from said attachments and are operable to be passed between said cage, second, free ends of said straps opposed to said first ends; and

means for fastening said second ends to said cylindrical sidewall operable to fasten each second end to a point across said slit from a respective first end.

5,007,567

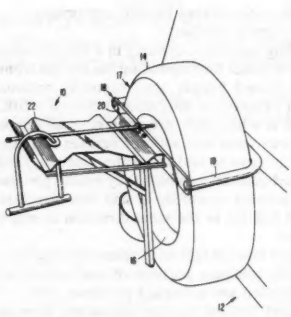
SUPPORT RACK FOR BICYCLES AND THE LIKE

Jeffrey P. Foster, 13276 Research Blvd. #208, Austin, Tex. 78750

Filed Jun. 5, 1990, Ser. No. 533,411

Int. Cl.[5] B60D *43/00*; B60R *9/00*

U.S. Cl. 224—42.13 **6 Claims**



1. A bicycle support rack mountable on a spare tire externally mounted on a vehicle with the central axis of the tire in a generally horizontal plane, the rack comprising the combination of

a frame including means defining a generally rectangular opening having a long dimension smaller than the outer diameter of the tire and a short dimension no smaller than the axial width of the tire so that said frame can be placed over the upper portion of an externally mounted, spare tire

a support portion fixedly attached to said frame and extending therefrom so as to lie in a generally horizontal plane when said frame embraces said tire, said support portion including recess means for receiving a bicycle frame;

a support strut connected to and extending downwardly from said support portion and frame adjacent a plane containing the outer generally vertical surface of said tire;

a diagonal brace connected to and extending between said support portion and said strut;

an elongated retaining bar positionable above said bicycle frame in a generally horizontal plane with an inner end of said bar penetrating said plane containing said outer, generally vertical surface of said tire and extending to a location adjacent the wheel on which said tire is mounted; and

means for locking said bar in said position, whereby said

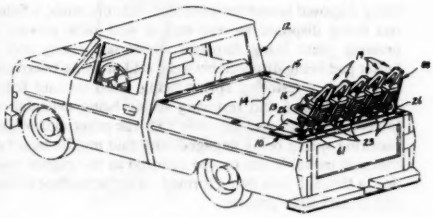
rack cannot be removed from said tire and said bicycle cannot be removed from said rack without first disengaging said means for locking.

5,007,568

TRUCK SIDEWALL MOUNTED CHAIN SAW CARRIER

Jimmy C. Da Vault, P.O. Box 78, Colburn, Id. 83865

Filed Feb. 6, 1990, Ser. No. 475,681
Int. Cl.[5] F16M 1/00
U.S. Cl. 224—42.45 R 28 Claims



1. A truck mountable chain saw carrier, for releasably securing and supporting a chain saw in a substantially upright condition, with the chain saw having a handle enclosure, an elongated blade extending downwardly from an engine case and a plurality of saw dog points on the engine case adjacent the blade, the carrier comprising:

an elongated frame;

the frame including opposed frame ends;

upstanding frame end plates adjacent the frame ends;

the end plates including base ends and top ends;

a saw dog receiving bar extending between the end plates and having a cross sectional dimension sufficient for the saw dog bar to be received between adjacent ones of the plurality of saw dog points for supporting the saw with the blade extending downwardly therefrom;

a blade receiver spaced toward the base ends of the end plates downwardly from the saw dog receiving bar for releasably receiving the saw blade with the saw dog receiving bar received between saw dog points on the saw; and

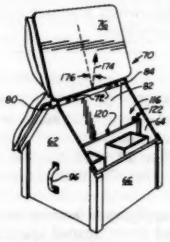
truck mounting brackets on the frame for attaching the frame to a truck with the saw dog receiving bar and the blade receiver oriented such that a saw mounted to the carrier is supported in a substantially upright orientation by the saw dog receiving bar and with the blade projecting downwardly to the receiver.

5,007,569

BACKSEAT STORAGE CONTAINER APPARATUS

Constance K. Zarb, 4097 Hardwoods, West Bloomfield, Mich. 48033

Filed Jan. 31, 1990, Ser. No. 472,848
Int. Cl.[5] B60R 7/04
U.S. Cl. 224—275 29 Claims



18. A hand-portable lightweight storage apparatus for use by one or two persons in the backseat of an automotive vehicle, comprising:

a housing having a floor structure, a roof structure, and an outer wall structure including at least front and rear wall sections which are substantially symmetrical about a central axis of the housing extending therebetween, the floor structure and outer wall structure being configured to form an internal storage space within the housing that is accessible to persons using the storage apparatus in the backseat of the vehicle, the roof structure having at least one high portion located generally above the central axis and two inclined sections normally arranged to slop generally downwardly from such high portion, thereby providing left and right normally inclined roof sections, the two inclined roof sections being arranged to pivot independently of one another and to pivot relative to the remainder of the housing; and

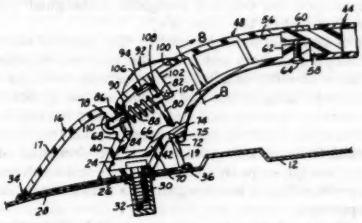
means, supported at least in part by the roof structure, for cushioning heads of persons in the backseat of the automotive vehicle on either side of the apparatus and resting at least in part against the apparatus.

5,007,570

LUGGAGE RACK FOR A VEHICLE

Francis Himmel, Sterling Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

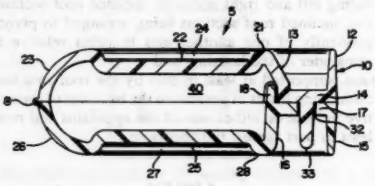
Filed Apr. 2, 1990, Ser. No. 502,952
Int. Cl.[5] B60R 9/04
U.S. Cl. 224—321 4 Claims



1. In a luggage rack for mounting on the roof of a vehicle, the luggage rack comprising a pair of elongated side rails, each side rail being securable to the roof of a vehicle adjacent to one side of the vehicle and extending fore and aft of the vehicle, each side rail having an elongated slot therein, a pair of stanchions, each stanchion having a tongue, the tongue of each stanchion being receivable in an elongated slot of a side rail and slidable therealong, a cross member extending between the stanchions, the improvement comprising each stanchion having a hollow interior, a locking pin within the hollow interior, the stanchion having an opening extending from the exterior thereof to the hollow interior, the locking pin slidably extending through said opening, spring means urging the locking pin in a direction to project out from the stanchion, manually engagable locking pin retraction means attached to the locking pin for drawing the locking pin against the force of the spring means into the stanchion, said manually engagable locking pin retraction means including a slide button on the exterior of the stanchion, the stanchion having a slot therethrough positioned under the slide button, a lever extending from the slide button through the slot into the stanchion hollow interior, and means pivotably connecting the lever to the locking pin whereby movement of the slide button in one direction causes retraction of the locking pin and movement of the slide button in the other direction causes extension of the locking pin, each side rail having a plurality of spaced apart pockets along the length thereof adjacent to the elongated slot, each locking pin being receivable in a pocket of a side rail to maintain the stanchions in a fixed position, the locking pins being retractable out of the pockets by the locking pin retraction means to permit sliding of

the stanchions in the elongated slots to different adjusted positions.

5,007,571
SPROCKET FEED STRIP REMOVER
James S. Nasby, Skokie, and Michael J. Rood, Hoffman Estates, both of Ill., assignors to Perf-Mate Company, Skokie, Ill.
Filed Aug. 29, 1988, Ser. No. 237,955
Int. Cl.[5] B26F 3/02
U.S. Cl. 225—106 5 Claims



1. A manually operable clamp for removing a margin strip from printer paper having sprocket feed margin strips containing spaced sprocket tooth receiving openings and detachably connected to the main body of the printer paper by a tear line of perforations, comprising:

upper and lower jaws connected by a longitudinal live hinge, each said jaw having an elongated rectangular clamping surface which is matingly engageable with a corresponding opposed elongated rectangular clamping surface and on the other jaw;

one of said jaws having a portion that includes one of said clamping surfaces and has within said one clamping surface a plurality of aligned pin-receiving openings therein corresponding in size and spacing to said sprocket tooth receiving openings and said portion also having inwardly of said pin-receiving openings and parallel thereto longitudinal fence means against which the elongated edges of said margin strips abut when said sprocket tooth receiving openings therein are in registration with said pin-receiving openings;

the other jaw having a portion that includes the other of said clamping surfaces and has within said other clamping surface a plurality of aligned pins projecting therefrom corresponding in size, number and spacing to said pin-receiving openings and matingly insertable therein when said jaws are closed with said clamping surfaces engaged; and

live hinge having sufficient flexibility so as to allow sufficient shifting of said jaws relative to each other to permit said pins to enter said sprocket receiving holes in stacks of various thickness of said margin strips.

5,007,572
ELECTRICAL STAPLER
Lin Chung-Cheng, 2FL., No. 7-2, Lane 27, Chungshan N. Rd., Sec. 2, Taipei, Taiwan
Filed Aug. 27, 1990, Ser. No. 572,425
Int. Cl.[5] B25C 5/02, 7/00; B27F 7/79, 7/36
U.S. Cl. 227—7 1 Claim

1. An electrical stapler comprising:

a base provided with a battery container;

a motor serving as a driving means;

a stapling mechanism wherein a Y-shaped linkage is pivoted to a fixing plate, and front end of said Y-shaped linkage is formed with a through hole, a fixing rod being inserted into said through hole, two ends of said fixing rod being respectively connected with two compression springs, other ends of said springs being mounted on a fixing member;

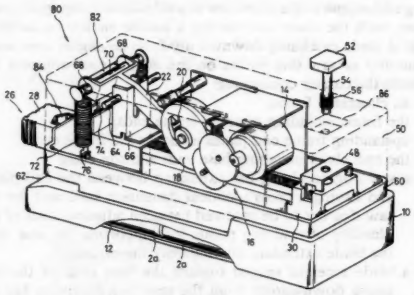
a gear set having several gears one of which meshes with said motor and another of which is a driven gear disk, on one side of said driven gear being disposed symmetrical biasing rods which can press one end of said Y-shaped linkage when operated;

a fine switch suitable to be pressed by said biasing rods to control opening/closing of a circuit;

a middle board fixed on said base to form a stapling groove therebetween;

a magazine portion having a staple groove rear end of which is disposed an arch hook and an engaging recess;

a slide groove a rear vertical wall of which is formed with two opposite slide channels, a transverse movable rod being disposed in and between said slide channels, a fixing rod being disposed at rear end of said slide groove, a pressing plate being disposed under said fixing rod, a buffer pad being disposed between said pressing board and fixing rod, a restoring spring being fitted on said fixing rod, one end of said restoring spring being extended to lower portion of said movable rod, the other end of said restoring spring being engaged with said middle board so that said movable rod can be restored to its original position, a through hole being formed on upper surface of rear end of said slide groove;



a magazine means formed by said magazine portion and slide groove;

a -shaped plate going through said through hole of said slide groove to abut against said movable rod;

an upper cover covering said base and having a hole corresponding to said -shaped plate;

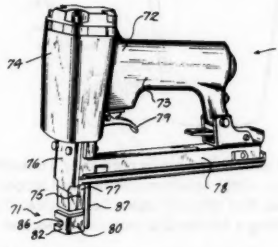
a pressing button having a lower shaft rod, a spring being fitted on said shaft rod, lower end of said shaft rod being extended through said hole of said upper cover to abut against said -shaped plate; and

a limit switch disposed in said base and slightly protruding beyond said stapling groove; whereby when said limit switch is touched and activated by papers to be stapled, said motor will drive said gear set so as to rotate said gear disk, making said biasing rods separated from said Y-shaped linkage so that said pressing plate is no more bound and will be bounded downward by a spring to strike out a staple placed in said stapling groove, and when another biasing rod again abuts against said Y-shaped linkage and touched said fine switch, said motor stops and one stapling movement is completed.

5,007,573
STAPLE GUN SUPPORT ASSEMBLY
Arvo F. Uuskallio, Hartland, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed Nov. 20, 1989, Ser. No. 439,613
Int. Cl.[5] B25C 5/02
U.S. Cl. 227—139 5 Claims

1. In a tool for applying a fastener to a mounting bracket including upper and lower spaced apart ears having aligned fastener-receiving openings formed therethrough, said tool

including a housing having a manual grip portion, fastener driving means in said housing for driving a fastener through a driveway, fastener guide means aligned with said fastener driving means having said driveway therein with an upper receiving end and a lower discharge end, and a fastener magazine defining a longitudinal axis for holdng and sequentially feeding fasteners to said fastener guide means, the improvement comprising:



positioning means on said fastener guide means including longitudinal alignment means for longitudinally aligning said driveway relative to the fastener receivng openings in the mounting bracket, and lateral alignment means for laterally aligning said driveway relative to the fastener-receiving openings in the mounting bracket; and

support means on said fastener guide means for supporting the lower ear of said bracket during a fastener driving operation.

5,007,574

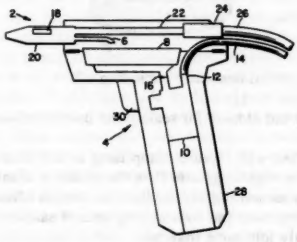
DESOLDERING DEVICE

Michael Carlomagno, Redwood City; Hamid Poostpasand, and Steven James, both of Mountain View, all of Calif., assignors to Metcal, Inc., Menlo Park, Calif.

Filed Sep. 14, 1989, Ser. No. 407,115

Int. Cl.[5] B23K *3/04, 3/047*

U.S. Cl. 228—20 **20 Claims**



1. A desoldering tool, comprising;

a base unit having an upper member and a lower member,

means securing said upper member to said lower member to permit movement of said upper member relative to said lower member to expose the interior of said lower member,

a solder collection chamber located in said lower member,

means for developing a partial vacuum below and above said solder collection chamber,

a cartridge having a heater and a tip with a bore therethrough, said cartridge disposed in said upper member and having a tail pipe extending from said tip to a position above said solder collection chamber, said tail pipe having a passage extending therethrough and communicating with said bore in said tip, and

a heater located at least immediately adjacent said tip.

5,007,575

DEVICE FOR PRODUCING CONE-SHAPED BODIES OF GLASS, PARTICULARLY TIFFANY-STYLE LAMPSHADES

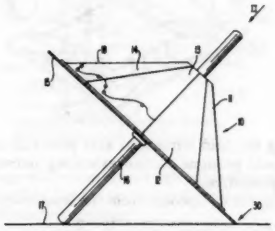
Peter Degenhardt, Arnoldstrasse 63, D-2000, 50 Hamburg, Fed. Rep. of Germany

Filed May 24, 1989, Ser. No. 408,041

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1988, 8807147[U]

Int. Cl.[5] B23K *37/04*

U.S. Cl. 228—44.3 **6 Claims**



1. A device for producing essentially cone-shaped bodies having flat sides composed of n attached adjoining segments, n being an integer, each segment being composed of a number of glass pieces fastened to each other, whereby boundaries of adjoining segments lie in a common plane or in a straight line, the device having a form body for the placing thereon of glass pieces that are to be soldered, said form body defining a base, a bottom plate placed at the base of the form body, and a rod arranged axially in the middle of the bottom plate and the form body, characterized by the fact that

the rod **(16)** is adjustably mounted relative to the form body and the bottom plate in an axial direction, said rod having a lower portion,

the bottom plate **(15)** is a polygon having n-sides, and

each said boundary line is diametrically opposite a side of the bottom plate,

whereby, when the lower portion of the rod **(16)** and any side of the bottom plate **(15)** are placed on a supporting surface **(17)**, the diametrically opposite boundary line **(18)** of two segments of the form body **(10)** is adjustable to a horizontal position through axial adjustment of the rod **(16)**.

5,007,576

TESTABLE RIBBON BONDING METHOD AND WEDGE BONDING TOOL FOR MICROCIRCUIT DEVICE FABRICATION

Helen Congleton, Huntington Beach; Carol L. Slaton, Irvine; Angelo Koudounaris, Hermosa Beach; Gerald B. Smith, Huntington Beach, and Vicente Soto, Riverside, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 26, 1989, Ser. No. 456,446

Int. Cl.[5] B23K *101/36;* **H05K** *3/32;* **H01L** *21/603*

U.S. Cl. 228—103 **17 Claims**

1. A method of fabricating an electrical device, comprising the steps of:

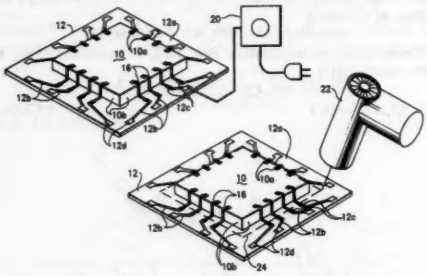
(a) providing an electrical circuit component having a plurality of electrical contacts;

(b) providing a temporary substrate having a plurality of electrical contacts conjugate to the contacts of the component respectively;

(c) removably fixing the component to the temporary substrate with the respective contacts in mutual alignment;

(d) electrically connecting the contacts of the component to the respective contacts of the temporary substrate with lead wires in such a manner that portions of the lead wires connected to the component will substantially retain their shapes relative to the component after the lead wires are

severed from the temporary substrate near points of connection of the lead wires to the contacts of the temporary substrate;



(e) severing the lead wires near said points of connection, leaving said portions thereof extending outwardly from the component; and

(f) removing the component from the temporary substrate.

5,007,577

MULTIPLE-COKE COMPLEX MATERIAL AND METHOD OF MANUFACTURING THE SAME

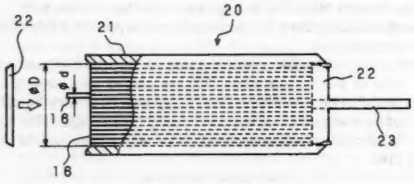
Kazuyuki Nakasuji; Chihiro Hayashi, both of Osaka, and Yoshiyuki Suzushima, Suita, all of Japan, assignors to Sumitomo Metal Industries Ltd. and Sumitomo Special Metals Co., Ltd., both of Osaka, Japan

Filed Nov. 21, 1989, Ser. No. 439,534

Claims priority, application Japan, Nov. 22, 1988, 63-295264

Int. Cl.[5] B23K *20/04*

U.S. Cl. 228—265 **14 Claims**



1. A method of manufacturing multiple-core complex material comprising:

a first step of preparing a multiple-layer clad complex core member with a circular cross section;

a second step of densely filling a plurality of said complex core members into a metallic casing where the ratio of inner diameter (D) of said metallic casing to the outer diameter (d) of said complex core member D/d is not less than 12, and of evacuating said metallic casing to form a multiple-core complex billet;

a third step of heating said complex billet; and

a fourth step of diffusion bonding to bond the core members to each other by a hot working at a reduction of area being not less than 20%.

5,007,578

WRAP-AROUND BODY WITH PROMOTIONAL FLAP EXTENSION

Ronald A. Simone, #261 - 3424 Vintage Dr., Modesto, Calif. 95356

Filed Aug. 6, 1990, Ser. No. 562,845

Int. Cl.[5] B65D *3/28*

U.S. Cl. 229—1.5 B **7 Claims**

1. A rolled wrap around body free of corners and formed from a blank which wraps around for more than 360° providing a main body portion and an overlap portion, and first and second spaced apart secured regions on said wrap around body wheresaid blank is secured upon itself, said first secured region defining a free end on said overlap portion, said second secured region located inwardly-away from said free end of said overlap portion, said main body portion presenting a constant wrap around surface on which to secure said first and second spaced apart region, said first secured region being releasable under force and providing a liftable flap back to said second secured region.

5,007,579

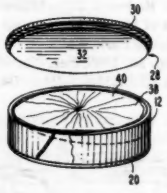
FIBERBOARD CYLINDRICAL CONTAINER WITH SPIRALLY WOUND TUBULAR BODY AND CLOSURE THEREFOR

Henry H. Thomas, Jr., 9 William St., Rumson, N.J. 07760

Filed Aug. 29, 1990, Ser. No. 574,110

Int. Cl.[5] B65D *3/10*

U.S. Cl. 229—5.5 **7 Claims**



1. A cylindrical container consisting of:

(a) a tubular body,

(b) a first end closure for sealing the bottom of said tubular body,

(c) said first end closure comprising a first disc having a diameter slightly greater than the diameter of said tubular body, a second slightly smaller disc, and an adhesive layer extending over the overlapping area of said discs to permanently join same together,

(d) said second disc being sized to create a friction fit with the interior of said tubular body,

(e) a second end closure for sealing the top of said tubular body,

(f) said second end closure comprising a first disc having a diameter slightly greater than the diameter of said tubular body, a second slightly smaller disc, and an adhesive layer extending over the overlapping area of said discs to permanently join same together,

(g) said second disc being sized to create a friction fit with the interior of said tubular body,

the invention being characterized in that

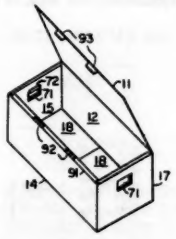
(h) said tubular body is formed from a length of spirally wound paperboard tube possessing significant axial strength to resist buckling and sufficient hoop strength to resist deformation.

5,007,580

FOLDABLE CONTAINER

Wayne P. Morrison, 950 Raco Dr., Ste. A, Lawrenceville, Ga. 30245, and Neil T. Castleberry, St. Augustine, Fla., assignors to Wayne P. Morrison, Lawrenceville, Ga.

Filed Feb. 21, 1990, Ser. No. 482,523
Int. Cl.[5] B65D 5/20
U.S. Cl. 229—117.17 7 Claims



1. A container formed from a cut and scored foldable blank of cardboard, said blank having a longitudinal direction and a lateral direction, comprising in combination:

(A) a top wall, a back wall, a bottom wall and a front wall, where said top wall is connected to said back wall by a lateral score line, said back wall is connected to said bottom wall by a lateral score line, and said bottom wall is connected to said front wall by a lateral score line, where the lateral dimension of said back wall and said front wall is less than the lateral dimension of said bottom wall and said top wall;

(B) a pair of middle side walls connected to said front wall by a pair of longitudinal score lines, where the lateral dimension of said middle side walls is less than the longitudinal dimension of said bottom wall;

(C) a pair of outer side walls connected to said back wall by a pair of longitudinal score lines, where the longitudinal dimensions of said outer side walls is greater than the longitudinal dimensions of said middle side walls;

(D) a pair of inner side walls connected to said outer side walls by a pair of double score lines of non-equal length, where said inner side walls are separated from said top wall by a pair of longitudinal slits, where the lateral dimension of said inner side wall is less than the lateral dimension of said outer side walls, and where the longitudinal dimension of said inner side walls is greater than the longitudinal dimension of said middle side walls;

(E) a pair of bottom panels connected to said outer side walls by a pair of lateral score lines, and where said bottom panels are separated from said bottom wall by a pair of longitudinal slits, and where said bottom panels are separated from said middle side walls by a pair of lateral slits, and where the sum of the longitudinal dimension of both said bottom panels is less than the lateral dimension of said bottom wall, and further where the lateral dimension of said bottom panels is less than the longitudinal dimension of said bottom wall;

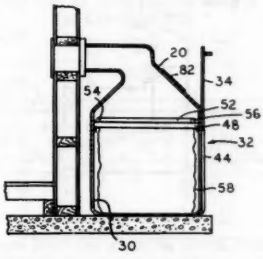
(F) a pair of angle slits connecting said longitudinal slits separating said top wall from said inner side walls to said longitudinal score lines connecting said back wall to said outer side walls, another pair of angle slits connecting said longitudinal score lines connecting said back wall to said outer side walls to said longitudinal slits separating said bottom wall from said bottom panels, and still a third set of angle slits connecting said longitudinal slits separating said bottom wall from said bottom panels to said longitudinal score lines connecting said front wall to said middle side walls.

5,007,581

GARBAGE COLLECTION DEVICE

Ray C. Douglas, R.R. 3 Box 34, Brodhead, Wis. 53520

Filed Jul. 5, 1989, Ser. No. 375,735
Int. Cl.[5] B65D 91/00
U.S. Cl. 232—43.2 13 Claims



1. A garbage collection device extending through an outside wall of a dwelling for the reception therein of recyclable garbage, said device comprising:

a garbage receptacle disposed externally relative to the outside wall for the reception therein of the recyclable garbage;

cover means cooperating with said receptacle for covering said receptacle, said cover means defining a chute for the passage therethrough of the garbage;

a conduit means having a first and a second end, said first end cooperating with said chute, said conduit means extending through the outside wall of the dwelling such that when the recyclable garbage is inserted into said conduit means through said second end thereof, the recyclable garbage passes through said conduit means and said chute into said receptacle;

said receptacle including:

a housing, said housing being formed integrally with said cover means, said housing defining an unloading opening;

a door having a first and a second side and a first and a second edge, said door sealingly cooperating with said opening for permitting selective access to said receptacle for unloading thereof; and

said housing further including:

a first and a second channel member, said channel members being disposed parallel and spaced relative to each other adjacent to said first and second sides of said door for slidably receiving therein said first and second sides of said door such that when said door is disposed in a closed disposition thereof, said first and second edges of said door sealingly engage said housing, said door being guided by said channels from said closed disposition to an unloading disposition for permitting access to said receptacle.

5,007,582

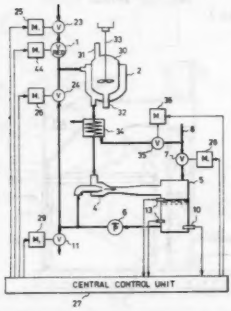
REDUCED PRESSURE STEAM HEAT TREATING DEVICE

Takayuki Morii, Kako, and Hideaki Yumoto, Kakogawa, both of Japan, assignors to TLV Company, Limited, Kakogawa, Japan

Filed Nov. 22, 1989, Ser. No. 439,944
Int. Cl.[5] F24F 11/00
U.S. Cl. 236—40 13 Claims

1. A reduced pressure steam heat treating device as comprising a pressure reducing valve having an inlet connected to a steam source and an outlet, a heat exchanger chamber having an inlet connected to the outlet of said pressure reducing valve and an outlet, an ejector having a suction chamber connected to the outlet of said heat exchanger chamber, means for feeding operation fluid to said ejector, and means for controlling the temperature of said operation fluid to control the sucking

pressure of said ejector, wherein said operation fluid feeding means comprises a fluid storage tank, pumping means for forcedly feeding the operation fluid in said storage than to a



jetting nozzle of said ejector, means for returning said operation fluid from said ejector to said storage tank, and means for replenishing said fluid storage tank with operation fluid of relatively low temperature.

5,007,583

DEVICE FOR ACCOMODATING EXPANSION IN FLUID CIRCULATION SYSTEMS

Anton Schwarz, Seefeld, Austria, assignor to A. Schwarz & Co., Seefeld, Austria

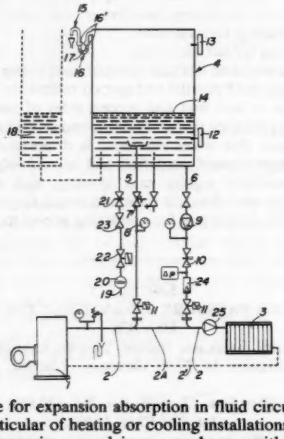
PCT No. PCT/AT88/00025, § 371 Date Jan. 4, 1989, § 102(e) Date Jan. 4, 1989, PCT Pub. No. WO88/08943, PCT Pub. Date Nov. 17, 1988

PCT Filed May 4, 1988, Ser. No. 314,056

Claims priority, application Austria, May 5, 1987, 1118/87; Jun. 2, 1987, 1400/87

Int. Cl.[5] F24D *3/10*

U.S. Cl. 237—66 **19 Claims**



1. Device for expansion absorption in fluid circulation systems, in particular of heating or cooling installations, having at least one expansion vessel in gas exchange with the atmosphere, into which liquid from the fluid circulation system is received and from which liquid is returned to the fluid circulation system via a pressure pump, and in one conduit to the expansion vessel an overflow valve adjustable to the operating pressure of the installation is provided, a lower pressure prevailing in the expansion vessel than in the fluid circulation system, characterized in that the expansion vessel (4) is connected to the fluid circulation system via separate inflow and outflow conduits (5, 6) and that in the outflow conduit (6) from the expansion vessel (4) a continuously running forcing and circulating pump (9) is arranged.

5,007,584

FUEL INJECTION DEVICE

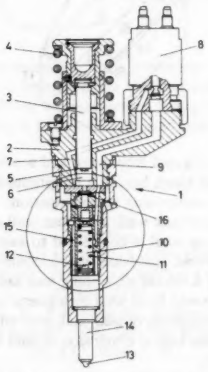
Francois Rossignol, Mornant, France, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 20, 1989, Ser. No. 424,782

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1988, 3844489

Int. Cl.[5] F02M *57/00*

U.S. Cl. 239—88 **20 Claims**



1. A fuel injection device having a housing (2), a fuel pump piston (3) in a bore in said housing, a pump work chamber (6) formed by an end of said fuel pump piston (3) and said housing, a fuel injection line (15) connected to said pump work chamber and communicating with an injection nozzle (13) via an interposed closing valve (16) having a valve closing element (21) operative toward the pump work chamber and an actuating element (19), a magnetic control valve (8) connected to said pump work chamber via a first pressure line (7) to control injection, said pump work chamber being connected with a relief line (9) which supplies fuel under pressure to one side of said actuating element (19) remote from the pump work chamber of said closing valve that closes toward said pump work chamber, a fuel return connecting line (20), said fuel connecting return line being opened and closed by said actuating element (19), and said actuating element of said closing valve (16) is embodied as a differential piston (19, 24, 25), said differential piston includes a first face (18) which urges said closing valve in a closing direction said first face (18) is larger in surface area than an effective surface area of a second face of said closing element subjected to fuel pressure in the opening direction whereby said closing valve (16) is closed by fuel pressure on said first face (18).

5,007,585

ROADSIDE SPRAY APPARATUS

Johnny L. Kubacak, P.O. Box 156, 300 Christine Road, Jourdanton, Tex. 78026, and Gary D. Byrd, P.O. Box 13, Bulverde, Tex. 78163

Continuation of Ser. No. 636,066, Jul. 30, 1984, abandoned, which is a continuation of Ser. No. 348,509, Feb. 12, 1982, abandoned, which is a continuation-in-part of Ser. No. 67,552, Aug. 17, 1979, Pat. No. 4,315,602. This application Apr. 10, 1985, Ser. No. 722,411

Int. Cl.[5] B05B *1/20*

U.S. Cl. 239—176 **1 Claim**

1. The Spraying apparatus for spraying chemicals to the side

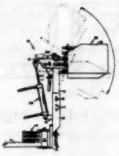
of a moving vehicle in a plurality of laterally adjacent swaths comprising:

means for mounting said apparatus on a vehicle;

said apparatus including an independently movable spray head;

said spray head including a plurality of sets of spray nozzles;

the nozzles in each set being mounted on the spray head and oriented to collectively spray a predetermined width of swath at a predetermined distance from the side of the vehicle;



said nozzles in each set selected to distribute chemical spray in predetermined droplet sizes, with the sets covering the furthest swath zones delivering the larger droplet sizes and the set adjacent the vehicle delivering the smaller droplet size;

each set communicating with a chemical source through a separate control means for operating each respective set of nozzles as a unit;

said control means being selectively activated to selectively deliver chemical spray to selected sets to provide the desired spray pattern and width of coverage.

5,007,586

ROTARY SPRINKLERS

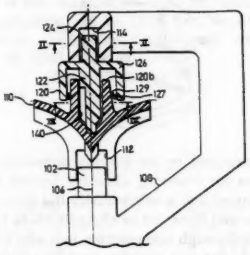
Amir Cohen, Tuvalium, Israel, assignor to Agroteam Consultants Ltd, Timrat and Plastro-Gvat, Kibbutz Gvat, both of, Israel

Continuation-in-part of Ser. No. 174,732, Mar. 29, 1988, Pat. No. 4,886,211. This application Aug. 29, 1989, Ser. No. 400,246

Claims priority, application Israel, May 13, 1987, 82513; Jul. 21, 1989, 91062

Int. Cl.[5] B05B *3/08*

U.S. Cl. 239—222.17 **20 Claims**



1. A rotary sprinkler comprising:

a nozzle outputting a jet axially thereof;

a rotor rotatably mounted with respect to the nozzle in alignment with the axial jet and having a surface formation impinged by the axial jet to deflect the jet laterally of the nozzle and to rotate the rotor;

and a retarding device having a first surface rotatable with the rotor with respect to the nozzle, a second surface non-rotatable with respect to the nozzle, and a viscous liquid between said first and second surfaces;

characterized in that said first surface of the retarding device is a cavity formed in a surface of the rotor opposite to that having said surface formation i pinged by the axial jet, and that said second surface of the retarding device is carried by a pin non-rotatably mounted with respect to said nozzle and disposed within said cavity; said cavity in the rotor being covered by a cover removably attached to the rotor and penetrated by said pin centrally of the cover.

5,007,587

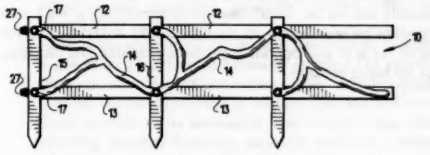
COMBINED FENCE AND IRRIGATION SYSTEM

Allen P. Daroca, 103 Lakeland Dr., Slidell, La. 70458

Filed Dec. 12, 1989, Ser. No. 448,979

Int. Cl.[5] B05B *9/00*

U.S. Cl. 239—289 **15 Claims**



1. A combined fence and irrigation system, comprising:

a plurality of generally vertical spaced posts;

a plurality of generally horizontal rails connecting said posts;

fluid passages in said posts and said rails;

each of said posts and said rails provided with countersunk circular apertures communicating with said fluid passages;

a radial ledge formed around each of said circular apertures;

a resilient bushing in each of said circular apertures, each of said bushing having a cylindrical central portion and terminating in spaced radially extending flanges, said radial ledge received between said flanges;

a connecting tube having opposite ends provided with oppositely facing stepped diameter frusto conical ridges, said connecting tube opposite ends frictionally engaged in said bushings, forming a sealed fluid connection;

fluid connection means for connecting said fluid passages with a water supply line; and

fluid distribution means for distributing water to an area adjacent said fence.

5,007,588

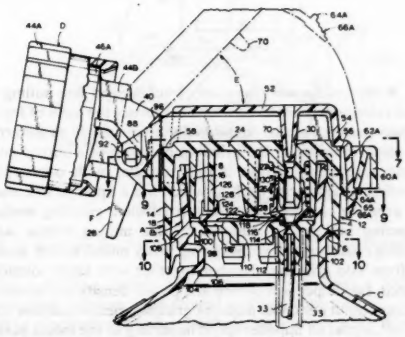
ASPIRATION-TYPE SPRAYER

Ho Chow, Cliffside Park, and Joseph E. Testa, Woodcliff Lake, both of N.J., assignors to Hunter-Melnor, Inc., Memphis, Tenn.

Filed Dec. 8, 1988, Ser. No. 281,559

Int. Cl.[5] B05B *7/04*

U.S. Cl. 239—318 **20 Claims**



1. A chemical sprayer comprising a container for the chemical to be sprayed, an aspiration assembly comprising a structure having an aspiration means adapted to communicate with the interior of said container and means for guiding a flow of fluid past said aspiration means and out from said structure,

means for mounting said assembly on said container, a cover receivable on said structure in an operative position, and releasable means for retaining said cover in said operative position, said cover having a part extending therefrom which, when said cover is in said operative position, engages and substantially completely seals said aspiration means so as to prevent the chemical from escaping from the container, in which said aspiration means comprises an aspiration passage having an end open toward said cover when said cover is in said operative position, said cover part then entering and blocking said aspiration passage, and in which said aspiration assembly has an air bleed passage communicating with said aspiration passage below its open end, said cover part, when said cover is in said operative position, reaching and blocking said air bleed passage.

5,007,589

PROCESS FOR SIMULTANEOUSLY LEACHING AND FINE MILLING A SUBDIVIDED SOURCE MATERIAL

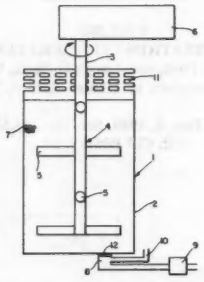
Dennis E. Evans, Rivonia, and Keith S. Liddell, Weltevreden Park, both of South Africa, assignors to Metprotech Limited, Douglas, Isle of Man

Continuation of Ser. No. 317,470, Mar. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 172,650, Mar. 24, 1988, abandoned. This application May 30, 1990, Ser. No. 529,702

Claims priority, application South Africa, Mar. 26, 1987, 87/2229

Int. Cl.[5] B02C *17/16*

U.S. Cl. 241—21 **10 Claims**



1. A process for simultaneously leaching and fine milling a sub-divided source material which comprises the steps of feeding said source material substantially continuously as a slurry in a leach solution, to the grinding chamber of a stirred mill having a rotatably driven impact impeller with outwardly extending stirring arms each of which has a tip at its free end, said grinding chamber containing particulate grinding media, subjecting said source material to fine milling within said grinding chamber, and withdrawing finely milled source material from said grinding chamber together with leach solution wherein said impeller is driven at a power density in kilowatts of power input per cubic meter of grinding media of at leas 100 kW/m^3, and at an impeller speed imparting to the media particles a momentum defined by the multiple of the arm tip speed and the individual mean media particle mass of at least 0.15 gram-meters per second, and the difference between the density of the grinding media and density of said slurry of source material is at least 1 Kg/liter.

5,007,590

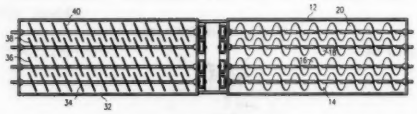
APPARATUS AND METHOD FOR MIXING SOLID OR SEMI-SOLID WASTES WITH ADDITIVES

Patrick D. Taylor, Rockwall, Tex., assignor to Itex Enterprises, Inc., Dallas, Tex.

Filed Jan. 23, 1990, Ser. No. 469,092

Int. Cl.[5] B02C *23/20*

U.S. Cl. 241—25 **16 Claims**



1. A method for treating solid or highly viscous semi-solid waste materials containing lumps of waste comprising the steps of:

reducing the size of the lumps in the waste material with a plurality of paddle-type chopper augers, said paddle-type chopper augers being mounted in a separator;

homogenizing the waste material by means of pin mixers; and

mixing the homogenized waste material with a predetermined amount of at least one selected additive.

5,007,591

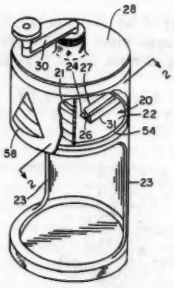
ICE SHAVER APPARATUS

Thomas E. Daniels, Jr., 917 E. 9140 South, Sandy, Utah 84094

Filed Jan. 12, 1990, Ser. No. 465,907

Int. Cl.[5] B02C *18/00, 19/08*

U.S. Cl. 241—37.5 **14 Claims**



1. An improvement in ice shaving apparatus of the type including (a) an ice receiving chamber having a cylindrical, upstanding sidewall and a substantially flat floor, (b) an elongate opening in said floor, (c) an elongate blade having a knife edge projecting through said opening into said chamber, (d) a removable cover for said chamber and (e) means for moving ice placed in said chamber against said knife edge to cut shavings from said ice, said improvement comprising

an elongate, blunt, blade guard positioned adjacent to said blade, said blade guard being movably mounted beneath said opening in said floor of said chamber for movement from a recessed position in which a leading edge of said blade guard is recessed beneath the knife edge of said blade to an extending position in which the leading edge extends through said opening in said floor of said chamber to project into said chamber at least to the same distance as said knife edge of said blade projects into said chamber and to thereby provide a guard for said knife edge,

means for biasing said blade guard to its extending position; and

means for depressing said blade guard to its recessed position

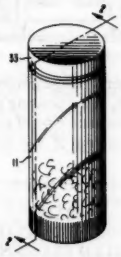
when said cover is positioned on said ice containing chamber.

5,007,592

DISPOSABLE PEPPERMILL

George W. Poncy, 3725 Investment La., Riviera Beach, Fla. 33404

Filed Apr. 15, 1987, Ser. No. 38,648
Int. Cl.[5] B02C 42/04
U.S. Cl. 241—169.1 4 Claims



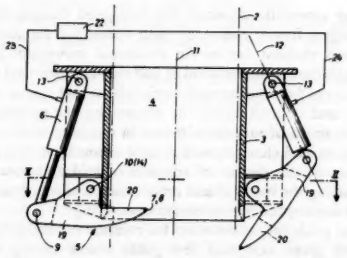
1. A food grinder comprising a hollow cylinder, means defining a female grinding element on one end of said hollow cylinder, a male grinding element positioned within said female grinding element, said male grinding element and female grinding element comprising means to grind food contained within said cylinder when said male element is turned within said female element, a knob rotatably mounted on the other end of said cylinder, a connecting rod connecting said male grinding element with said knob and comprising means to turn said male grinding element when said knob is rotated on said cylinder, said connecting rod being molded in one piece with said knob.

5,007,593

APPARATUS FOR EXPOSING THE REINFORCING BARS OF REINFORCED CONCRETE PILLARS

Zsolt Bérczes, Küsnacht, Switzerland, assignor to Diaber AG, Kuesnacht, Switzerland

Continuation of Ser. No. 336,102, Apr. 11, 1989, abandoned.
This application Jul. 10, 1990, Ser. No. 550,792
Claims priority, application Switzerland, Apr. 27, 1988, 1580/88; Nov. 15, 1988, 4235/88
Int. Cl.[5] B02C 1/10
U.S. Cl. 241—264 6 Claims



1. Apparatus for crushing a vertical reinforced concrete pillar to expose reinforcing bars contained therein, comprising:

(a) a horizontally arranged tubular frame (3) containing a central through passage for receiving the pillar in generally centered relation therein, said through passage having a vertical longitudinal axis (11);

(b) a plurality of crushing tool means connected with said frame in circumferentially spaced relation about said central through passage, each of said crushing tool means including:

(1) a chisel (5) pivotally connected intermediate its ends with said frame for pivotal movement about a horizontal pivot axis (14) normal to a vertical plane which contains said through passage longitudinal axis (11) and which bisects said pivot axis, said chisel having first and second arm portions on opposite sides of said pivot axis, said first arm portion being forked at its free end, thereby defining a pair of tine portions each having a first cutting edge (7,8) for engaging the pillar, said first cutting edges extending generally parallel with the pivot axis of said chisel;

(2) said chisel also including on each tine portion thereof a generally plate-shaped crushing member (15 spaced from an associated first cutting edge, said crushing member extending normal to said tine portion and generally normal to its associated first cutting edge, said crushing member including adjacent said first cutting edge a second cutting edge (17) inclined at an acute angle (α) relative to a line normal to its associated tine portion; and

(3) a plurality of piston and cylinder motor means (6) each pivotally connected at its ends between said frame and the free end of said second arm portion of the associated chisel for pivoting said chisels in opposite directions between crushing and disengaged positions relative to said frame, respectively, said pillar normally being centered relative to said frame when said chisels are initially pivoted in a crushing direction toward positions in which their cutting edges are in engagement with said pillar; and

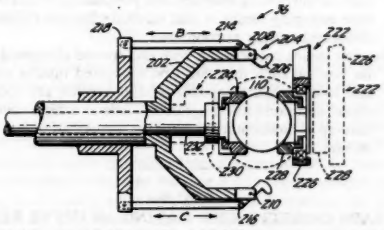
(c) flow control means (22) for controlling the flow of pressure fluid to said piston and cylinder motor means in such a manner that strokes of said pistons cause the chisels to maintain the pillar in centered relation relative to said frame during pivotal movement of said chisels in the crushing direction.

5,007,594

PREPARATION OF WOUND GOLF BALL CORES

Robert A. Brown, Mattapoisett, Mass., assignor to Acushnet Company, New Bedford, Mass.

Division of Ser. No. 53,948, May 26, 1987, Pat. No. 4,846,910.
This application Apr. 5, 1989, Ser. No. 333,985
Int. Cl.[5] A63B 47/00; B65H 54/64
U.S. Cl. 242—3 11 Claims



8. A machine for preparing a wound golf ball core comprising:

(a) a winding station for winding thread about a frozen center and forming a wound golf ball core; and

(b) a mechanical arm for manipulating and tying the thread onto said frozen center and for manipulating and tying off the thread on said wound golf ball core thereby preparing a wound golf ball core, wherein said tying means comprises a collet and a plurality of fingers attached to said collet.

5,007,595

CHUCK STRUCTURE

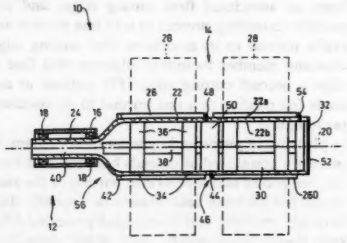
Peter Busenhart, Winterthur; Ruedi Schneeberger, Turbenthal, both of Switzerland; Erwin Holbein, Spartanburg, S.C.; Armin Wirz, Ossingen, Switzerland; Adolf Flüeli, and Hansueli Maier, both of Winterthur, Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Division of Ser. No. 279,184, Dec. 2, 1988, Pat. No. 4,953,802, which is a continuation of Ser. No. 911,816, Sep. 26, 1986, Pat. No. 4,811,910. This application Oct. 10, 1989, Ser. No. 419,603

Claims priority, application United Kingdom, Oct. 2, 1985, 8524303

Int. Cl.[5] B65H *54/547*

U.S. Cl. 242—46.4 6 Claims



1. A high speed chuck having an axis of rotation, comprising:

a first elongated tubular portion with an external circumference and possessing a length sufficient to receive a plurality of bobbin tubes for rotation about the axis of rotation to enable formation of a respective package in use on each of said plurality of bobbin tubes;

a second elongated tubular portion integral with said first elongated tubular portion and of reduced external diameter relative thereto and having an exterior;

said first elongated tubular portion and said second elongated tubular portion having a common longitudinal axis substantially coincident with said axis of rotation;

said first elongated tubular portion having substantially constant wall thickness through substantially its entire length and defining an internal chamber accommodating bobbin tube engaging means for holding each one of said plurality of bobbin tubes at said external circumference of said first elongated tubular portion for rotation about said axis of rotation and formation of the respective package;

said first elongated tubular portion possessing an end region disposed remote from said second elongated tubular portion for permitting insertion and positioning of said bobbin tube engaging means in said internal chamber of said first elongated tubular portion; and

bearing means cooperating with said second elongated tubular portion such that said first elongated tubular portion and said second elongated tubular portion are rotatable about said common longitudinal axis at a high speed for take-up of filamentary material at a speed of at least 3000 m/min.

5,007,596

TAPE CASSETTE REEL HAVING AN UPPER REEL MOLDED BY DICHROMATIC MOLDING PROCESS

Yuji Iwahashi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 18, 1989, Ser. No. 452,203

Claims priority, application Japan, Dec. 29, 1988, 63-331502

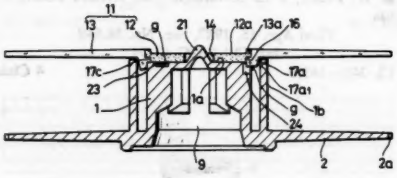
Int. Cl.[5] B65H *75/14*

U.S. Cl. 242—71.800 4 Claims

1. A tape cassette reel comprising:

(a) an integrally formed lower flange portion and reel hub, the reel hub having an end face, and

(b) an upper flange portion having an opaque central portion, an outer peripheral flange portion and a bonding surface between them, the upper flange portion being bonded to the reel hub, and wherein a shock-absorbing rib portion is formed at a radially inner peripheral side surface



of the outer peripheral flange portion so as to abut the end face of the reel hub, and a pouring gate mark is formed on the radially inner surface side of the shock-absorbing rib portion during molding of the outer peripheral flange portion.

5,007,597

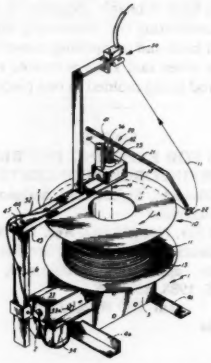
AUTOMATIC DISPENSER FOR ELONGATED FLEXIBLE COILED ELEMENTS

Johnnie L. Jones, 5650-10 Mile Rd., Rockford, Mich. 49341

Filed Jan. 31, 1989, Ser. No. 304,724

Int. Cl.[5] B21C *47/18;* B65H *49/34*

U.S. Cl. 242—82 17 Claims



1. An automatic dispenser for elongated flexible elements including a frame, means on said frame for supporting an elongated element carrier for rotational movement about a given axis during the removal of said element from said carrier; drive means for rotating said carrier about said axis at variable speeds; and control means for controlling the actuation and variable speed of said drive means in response to the tension exerted on said element; said control means including a rotatable means, the degree of rotation of said rotatable means determining the speed of said drive means and rotational speed of said carrier; the improvement comprising:

a first guide means mounted for rotation substantially about said given axis; said first guide means having a guide member adapted to receive therethrough and guide an elongated flexible element received from said carrier;

a second guide means located at a spaced position from said first guide means and adapted to receive said element after the element is passed through said first guide member; said second guide means being located with relation to said first guide means so that a tension exerted on said element after passing through said first and second guide means

induces said guide member of said first guide means to follow a circular path in one direction about said given axis, the degree of rotation of said guide member along such rotational path being proportionally dependent upon the tension exerted on the element whereby the greater the tension on said element the greater degree of rotation of said guide member;

means for biasing said guide member to rotate about said given axis in a direction along said circular path opposite to said one direction;

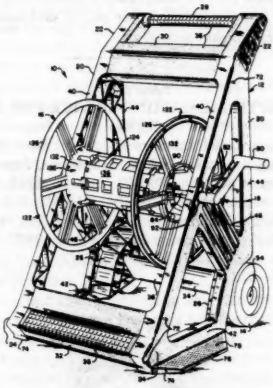
said first guide means being operatively connected to said rotatable means causing said control means to control the degree of rotation of said rotatable means in proportion to the tension on said element and thus control the speed of said drive means and rotational speed of said carrier in proportion to the tension on said element whereby increase of tension on said element proportionally increases the rotational speed of said carrier and decrease in the tension on said element proportionally decreases the rotational speed of said carrier.

5,007,598

HOSE REEL ASSEMBLY

Kenneth J. Spear, Vienna, W. Va., and Ronald R. Fowler, Coolville, Ohio, assignors to O. Ames Co., Parkersburg, W. Va.

Filed Oct. 25, 1989, Ser. No. 426,212
Int. Cl.[5] B65H *75/34*
U.S. Cl. 242—86.2 **40 Claims**



1. A portable hose reel assembly comprising

a pair of molded plastic side frames each of similar generally triangular shaped configuration providing three corner structures,

said side frames being disposed in transversely spaced parallel relation with corresponding corner structures facing one another,

a first of said three corner structures of each side frame having first socket means therein opening in a direction toward the corresponding corner structure,

a second of said three corner structures of each side frame having second socket means therein opening in a direction toward the corresponding corner structure,

transverse frame members each formed of plastic by blow molding so as to define an elongated hollow tubular central portion having closed end portions on opposite ends of said central portion,

the closed end portions of said transverse frame members being shaped to respectively fit snugly within said first and second socket means,

each closed end portion and the associated socket means having interengaging surface means operable in response to the transverse movement of the closed end portion into the associated socket means to retain the closed end portion against transverse movement out of the associated socket means so that when all of said closed end portions are retained in snugly fitting relation with the associated socket means said transverse frame members and said side frames constitute a hose reel supporting frame structure,

a third of said three corner structures of said side frames having aligned shaft receiving openings therein,

a shaft extending through said shaft receiving openings,

supporting wheels on said shaft for enabling the hose reel supporting frame structure to be rollingly supported for manual movement along a generally horizontally extending surface by an operator grasping a central portion of a transverse frame member associated with said first socket means,

means on said second corner structures for engaging a generally horizontally extending surface on which said supporting wheel are engaged for stably fixedly supporting said hose reel supporting frame structure on said generally horizontally extending surface,

a hose reel structure for receiving a length of hose in coiled formation thereon, and

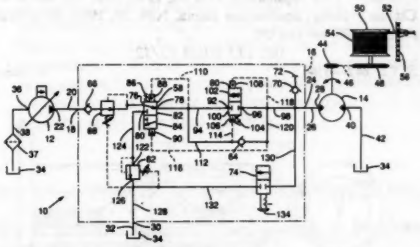
means for rotatably supporting said hose reel structure between said side frames in a position such that said hose reel structure is disposed above a generally horizontally extending surface on which said hose reel supporting frame structure is manually moved or stably fixedly supported as aforesaid.

5,007,599

HYDRAULICALLY-ACTUATED CONTROLLER FOR REEL DRIVE

Allen P. Forsyth, Portland, Oreg., assignor to Atlas Copco Construction and Mining Holding AB, Stockholm, Sweden

Filed Jul. 28, 1989, Ser. No. 386,956
Int. Cl.[5] B65H *75/42*
U.S. Cl. 242—86.51 **21 Claims**



1. A hydraulic controller for use with a reel used for windably storing a flexible cable extending from the reel to a tie point to which a distal terminus of the cable is affixed, the reel paying out a required length of the cable whenever the distance between the reel and said tie point is increasing, maintaining the unwound cable extending from the reel to the tie point in a taut condition when said distance is remaining constant, and paying in the cable when said distance is decreasing, the reel powered by a hydraulic motor hydraulically coupled to a source of pressurized hydraulic fluid, the controller comprising:

a first port hydraulically coupled to the source of pressurized hydraulic fluid, a second port hydraulically coupled to the motor, and a third port hydraulically coupled to a reservoir of hydraulic fluid;

a hydraulic pressure-actuated valving means for valving the flow of hydraulic fluid from the first port to the second port and from the second port to the third port, the valving means assuming a pay-in mode when the distance between the reel and the tie point is either decreasing or

remaining constant, and a pay-out mode when said distance is increasing;

(a) in which pay-in which the valving means passing pressurized hydraulic fluid from the first port to the second port to drive the hydraulic motor to urge the reel to rotate in a pay-in direction; and

(b) in which pay-out mode the valving means occluding passage of hydraulic fluid from the first port through the valving means to the second port and passing a partially restricted flow of pressurized hydraulic fluid from the second port to the third port so as to hydraulically brake rotation of the motor when the reel is rotating in a pay-out direction;

the valving means comprises a first, a second, a third, and a fourth valve, the first, second, third, and four valves hydraulically intercoupled, wherein;

(a) the first valve is a two-position valve having an inlet port, an outlet port, and an exhaust port, the inlet port coupled to the first port of the valving means;

(b) the second valve is a two-position valve having an inlet port coupled to the second port of the valving means and an outlet port coupled to both the outlet port of the first valve and the second port of the valving means;

(c) the third valve is an adjustable pressure-relieving pressure-control valve having an inlet port coupled to the exhaust port of the first valve and an outlet port coupled to the third port of the valving means; and

(d) the fourth valve is a check valve having an inlet port coupled to the outlet port of the second valve and an outlet port coupled to the second port of the valving means.

5,007,600

TWO STAGE REEL MECHANISM FOR TAPE RECORDER

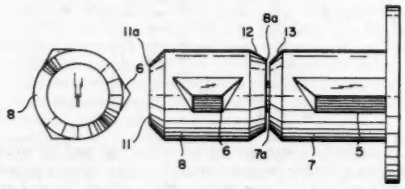
Satoru Koizumi, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 264,082, Oct. 28, 1988, abandoned, which is a division of Ser. No. 933,391, Nov. 21, 1986, Pat. No. 4,815,675. This application Jan. 25, 1990, Ser. No. 469,678

Claims priority, application Japan, Nov. 29, 1985, 60-184729; Nov. 29, 1985, 60-184730

Int. Cl.[5] G11B *15/32*

U.S. Cl. 242—194 **5 Claims**



1. A two stage reel mechanism of a tape recorder on which first and second compact type cassette tapes supported in a stacked arrangement by a cassette holder of said recorder can be interchangeably loaded, said first cassette tape and said second cassette tape being identical in shape and size with each other, said first cassette tape being provided with a first hub which has a plurality of first projections at an inner circumference thereof, said second cassette tape being provided with a second hub which has a plurality of second projections at an inner circumference thereof, said holder being movable toward and away from a main body of said recorder between a closed position, wherein said first and second cassette tapes can be recorded and played, and an open position, wherein said first and second cassette tapes can be inserted in and removed from said holder, said two stage reel mechanism comprising:

a first reel operatively connected to a reel driving means for transmitting a rotating force from the reel driving means to said first cassette tape, said first reel being provided with a plurality of first engaging members made of rigid material at its periphery for engaging in a rotating direction of said first reel with said first projections when said holder is in said closed position, said first reel being juxtapositioned to a bearing portion of a tape winding or tape feeding reel; and

a second reel, operatively connected to the reel driving means and coaxially provided with said first reel for transmitting a rotating force of the driving means to said second cassette tape, said second reel being provided with a plurality of second engaging members made of rigid material at its periphery for engaging in a rotating direction of said second reel with said second projections when said holder is in said closed position,

wherein the diameters of said first and second reels are equal, the height measured from the center of the axis of rotation of said first and second reels to the top or outermost dimension of said respective first and second engaging members is equal, at least the leading end of said second reel has a tapered portion, and said second engaging member is shaped as a prism extending along an axial direction of said second reel, including two side surfaces for abutting said second projections so as to transmit said rotating force, and having a first base portion at a leading end thereof and a second base portion at the other end thereof, said first base portion comprising a pyramid whose vertex is pointed out toward said leading end of said second reel and is situated on said second reel, said second base portion comprising a pyramid whose vertex is pointed out toward the other end of said second reel and is situated on said second reel.

5,007,601

WATER DEPTH MEASURING DEVICE FOR A FISHING REEL

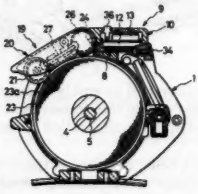
Masaharu Emura, and Takehiro Kobayashi, both of Hiroshima, Japan, assignors to Ryobi Ltd., Hiroshima, Japan

Continuation of Ser. No. 399,407, Aug. 28, 1989, abandoned, which is a continuation of Ser. No. 155,849, Feb. 16, 1988, abandoned. This application Feb. 9, 1990, Ser. No. 478,020

Claims priority, application Japan, Feb. 16, 1987, 62-21617[U]

Int. Cl.[5] A01K *97/12*

U.S. Cl. 242—223 **8 Claims**



1. A water depth measuring device for a fishing reel comprising:

a reel body having a spool rotatably supported therein;

reel rotation signal generating means connected to a supporting arm rotatably mounted on said reel body, said signal generating means for generating a magnetic flux line cast signal corresponding to a case length of fishline in response to the rotation of said spool, said signal generating means including a first roller for contacting a fishline wound on said spool, a second roller having a magnet attached thereto for generating said line cast signal, and means for linking said first roller to said second roller to rotate said second roller in response to the rotation of said first roller;

a watertight compartment mounted on said reel body; and

line cast sensor means disposed in said watertight compart-

ment and adapted to detect said magnetic flux line cast signal through a wall of said watertight compartment,

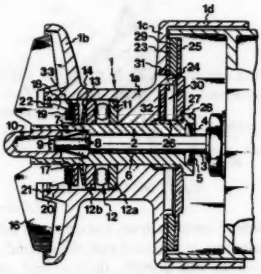
line cast indicator means connected to said sensor for indicating the length of a fishline cast from said spool.

5,007,602

CLICK MECHANISM IN A FISHING REEL

Karl L. Carlsson, Asarum, Sweden, assignor to Abu Garcia Produktion AB, Svangsta, Sweden

Filed Mar. 16, 1990, Ser. No. 494,340
Int. Cl.[5] A01K *89/027*
U.S. Cl. 242—246 **3 Claims**



1. A click mechanism in a fishing reel, said click mechanism being adapted to produce a click sound on relative rotation between a shaft having a first member non-rotatably connected thereto, and a second member rotatably mounted on the shaft, said mechanism comprising

a snap-action click ring provided between said first member and said second member;

first teeth formed on the side of said first member facing said snap-action click ring; and

second teeth formed on the side of said second member facing the snap-action click ring;

said snap-action click ring having a first resilient tongue and a second resilient tongue which extend in the same direction in the circumferential direction of said snap-action click ring but are outwardly bent in opposite directions in the axial direction thereof;

said first resilient tongue engaging said first teeth, and said second resilient tongue engaging said second teeth; and

said first and said second teeth and said first and said second tongue being so designed that on rotation of said second member relative to said shaft in one direction, the second tongue snaps over said second teeth and produces a click sound, while said first tongue with respect to said one direction holds the snap-action click ring in non-rotatable engagement with said first teeth, and that on rotation of said second member relative to the shaft in the opposite direction, said second tongue with respect to said opposite direction holds the snap-action click ring in non-rotatable engagement with said second teeth, thereby entraining the snap-action click ring in the rotary motion of said second member, at the same time as said first tongue snaps over said first teeth and produces a click sound.

5,007,603

ADJUSTABLE LOAD BOLT ADAPTER BRACKET ASSEMBLY

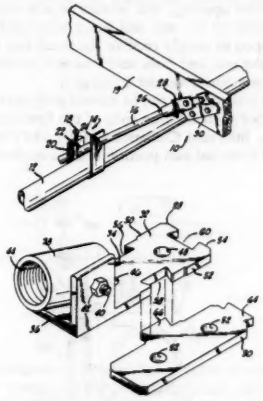
Kraig A. Kirschner, Corona, Calif., assignor to Automated Fire Control, Incorporated, South El Monte, Calif.

Continuation-in-part of Ser. No. 537,907, Jun. 11, 1990. This application Jul. 25, 1990, Ser. No. 558,077
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—59 **4 Claims**

1. An adjustable bracket assembly for selective use with a varying number of fasteners to secure a bracing element to a fixed structure, said assembly comprising:

an attachment member having means thereon for engaging a bracing element and defining a flat plate portion extending from said means, said plate portion having a pair of axially aligned fastener receiving apertures therein and a locking tab securing channel formed in opposite sides and one end of said plate portion; and

an adapter plate for cooperation with said attachment member to provide additional fastener receiving apertures for the securement of the bracing element to the structure, said plate defining a plurality of axially aligned fastening



receiving apertures therein, a first locking tab extending from one end thereof and a second locking tab extending from one side thereof, one of said tabs being adapted to be received within one of said channels for interlocking said adapter plate with said attachment member in a selected disposition adjacent thereto whereby the number of available fastener receiving apertures for use in securing the bracing element to the fixed structure can be increased by the number of fastener receiving apertures in said adapter plate and the footprint defined by said attachment member and interlocked adapter plate can be varied to fit the available space on a fixed structure.

5,007,604

SIDE LOAD TYPE PIPE HANGER WITH SINGLE BOLT CLOSURE

Peter S. Richards, Issaquah, Wash., assignor to Progressive Fastening, Inc., Seattle, Wash.

Continuation of Ser. No. 730,285, May 3, 1985, abandoned. This application Nov. 9, 1988, Ser. No. 269,969
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—62 **11 Claims**

1. A pipe hanger, comprising:

a piper receiving saddle constructed from a flat metal bar formed into a generally C-shape and comprising a first straight arm portion having an inner end, a second straight arm portion having an inner end, and an interconnecting, substantially semi-circular bight portion connected directly to the inner ends of said arm portions, said first and second arm portions each extending at a tangent from the bight portion and each having a free outer end, said outer ends defining between them a pipe avenue for accommodating a pipe which is moved sideways through said avenue into the saddle;

a support leg having an end that is butt welded to an external surface of said saddle; and

an improved system for securing a pipe within the C-shaped saddle, comprising:

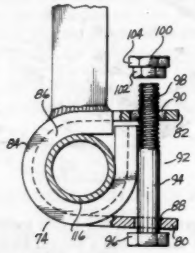
a bolt comprising a rod body, an enlarged head at the first end of said rod body and a threaded end portion at the second end of said rod body;

a nut including a central opening that is threaded with threads which complement the threads on the bolt, said nut including a small size first end portion having a cross-sectional shape that is other than circular, and a large size second end portion;

a first opening in said first arm portion which is smaller in size than the head of the bolt but is larger in size than the rod body of the bolt;

a second opening in said second arm portion, said second opening being substantially larger in size than the rod body of the bolt, so that the rod body also fits loosely in said second opening, and smaller in size than the second end portion of the nut, and being sized and complementary shaped to snugly receive the small size first end portion of the nut, and hold said first end portion of the nut, and the nut itself, against turning;

whereby a pipe section can be moved sideways through said avenue between the free ends of the first and second arm portions, into said C-shaped saddle, and the bolt can be inserted threaded end portion first through the first opening, and then through the second opening, and then the nut can be applied to the bolt with its small size first end portion directed towards the second opening, and the bolt can be screwed into the nut and the nut can be moved endwise to place the small size first end portion of the nut snugly within the second opening, and the head of the bolt can be rotated for drawing the nut and bolt together and applying a clamping force on the pipe section, with the fit of the small size first end portion of the nut within the second opening serving to hold the nut against rotation while the bolt is being rotated, and with the snug engagement of the small end of the nut within the second opening, backed by the large end of the nut, resulting in the nut and bolt substantially stiffening the second arm portion as the nut and bolt assembly are drawn together, so that bending will occur within the first arm portion;



with the first opening being sized to allow sideways alignment movement of the bolt in the first opening as said first arm portion bends and the bolt becomes aligned with the nut, during tightening of the bolt within the nut; and

with the first straight arm portion bending towards the second straight arm portion when the nut and bolt assembly are drawn together.

5,007,605

HOSE AND CABLE SUPPORT

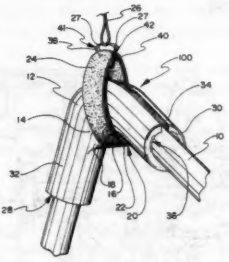
Daniel P. Horvath, Grande Prairie, Canada, assignor to Hosehandlers International Inc., Edmonton, Canada

Filed Mar. 30, 1989, Ser. No. 330,745
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—62 **10 Claims**

1. An apparatus for suspending hoses or cables, comprising:

a. an elongate support of a polymer plastic material having a support surface in the shape of an arch with a vertex, depending haunches and intrados, such that a hose or cable may be supported upon the vertex and haunches of the arch, the support having a first end and a second end, the intrados being reinforced, such that the radius of the arch does not vary under the weight of the hose or cable, the support having side walls adjacent the support surface, such that the side walls form an interior channel which prevents transverse movement of the hose or cable; and

b. a strap embedded in the intrados substantially equidistant between the first end and the second end of the support, the strap having a first portion which extends from one side of the support terminating in a first end and a second portion which extends from the opposed side of the support terminating in a second end, the second portion being longer than the first portion, the first end and second end of the strap being formed in loops, such that when the second portion is placed under a hose or cable and then fed through the loop in the first portion a force exerted by a suspension line secured to the loop on the second portion will cause the second portion to pass through the loop in the first portion thereby drawing the support into a position wherein the support surface underlies the hose or cable.

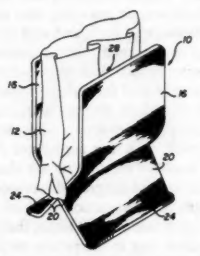


5,007,606

SUPPORT STAND FOR FOOD POUCHES

Ronald R. Allen, 211 N. Victoria; William D. McEwen, 727 Viewcrest Dr., both of Ventura, Calif. 93003

Filed Jan. 23, 1990, Ser. No. 468,611
Int. Cl.[5] A47G *23/02*
U.S. Cl. 248—152 **6 Claims**



1. A support stand for receiving and supporting a flexible pouch of the type used for containing dehydrated food or the like, said support stand comprising:

first and second substantially identical plate members each defining an upright side wall, and a generally rectangular base wall joined to said side wall along a bend line at a lower edge thereof and extending generally angularly with respect to said side wall;

each of said base walls defining a leading edge and trailing edge extending downwardly and outwardly from said bend line, each of said base walls further defining and elongated slot opening at the leading edge thereof and extending generally in parallel with said bend line approx-

imately to a midpoint between the leading and trailing edges thereof;

said plate members being releasably and slidably interlocked by orienting said plate members with the leading edges of their respective base walls in facing relation and slidably fitting said base wall of each plate member into the slot formed in the base wall of the other plate member, thereby interconnecting said plate members with said base walls interlocked in a generally X-shaped profile and with said side walls projecting upwardly from said base walls in spaced and generally parallel relation to define a substantially horizontally oriented pouch-receiving trough, said plate members being slidably separable and nested one upon the other to pack in a substantially minimum profile geometry.

5,007,607

SUPPORT UNIT FOR HOME APPLIANCES

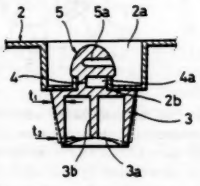
Tae Y. Kim, Suwon, Japan, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 30, 1989, Ser. No. 400,876

Claims priority, application Rep. of Korea, Dec. 30, 1988, 88-22121

Int. Cl.[5] F16M *11/00*

U.S. Cl. 248—188.9 **32 Claims**



1. A support unit of home appliances, comprising:

a supporting body on which a base plate of home appliances is fixed said supporting body having a longitudinal axis and exterior sidewalls forming an inner space, said supporting body including:

a rib formed in said inner space and extending completely radially across from oppositely disposed portions of said sidewalls of said supporting body;

a curved face formed at a bottom of the rib for adding elasticity;

a surface thickness of said supporting body whereby the thickness of a lower surfaces thinner than that of an upper surface;

a neck having a fixing hole thereinto extending radially and substantially perpendicularly to said longitudinal axis, said fixing hole opening to the exterior of the neck, formed on the supporting body; and

an inserting protrusion having an orifice thereinto extending radially and substantially perpendicularly to said longitudinal axis, said orifice opening to the exterior of the neck.

5,007,608

TELEVISION WALL BRACKET

Joseph W. Carroll, Jr., West Chester, Pa., assignor to Kim Manufacturing Company, Downingtown, Pa.

Filed Aug. 28, 1989, Ser. No. 399,172

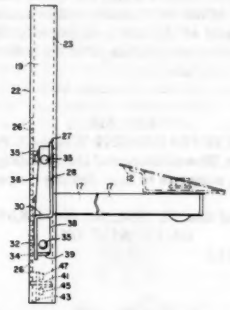
Int. Cl.[5] A47F *1/10*

U.S. Cl. 248—297.2 **11 Claims**

1. A wall bracket mounting device for attaching a television set to a wall, comprising:

an elongated bracket adapted to be mounted on a wall, the elongated bracket including a flat back plate having at least one row of locking elements formed therein and a pair of U-shaped confronting channels extending along opposite side edges thereof defining trackways of a predetermined width with a pair of vertical inner track surfaces spaced from said back plate; and

a rigid slide assembly including a rigid angled member having a rigid lower flat portion, a middle juncture position, and a rigid upper flat portion parallel to and forwardly spaced from said lower flat portion and an elongated support arm projecting outwardly from the middle juncture portion, wherein said rigid slide assembly is engageable within said pair of U-shaped confronting channels and operable between a first position wherein said upper flat portion is rotated toward the back plate with the lower flat portion rotated away and disengaged from the back plate such that the rigid slide assembly may be adjusted vertically in the elongated bracket and a second



position wherein said lower flat portion of said rigid slide assembly contacts said back plate and said upper flat portion of said rigid slide assembly contacts said pair of vertical inner track surfaces so as to lock the rigid slide assembly in a predetermined position, the locking of said rigid slide assembly against vertical movement provided by the pivotal movement of said rigid slide assembly about the intersection defined by the support arm and the vertical longitudinal axis of the rigid slide assembly to enable engagement of the rigid slide assembly with the elongated bracket such that pivoting of said rigid slide assembly with respect to said elongated bracket being the only means necessary for adjusting movement of said rigid slide assembly in said elongated vertical bracket.

5,007,609

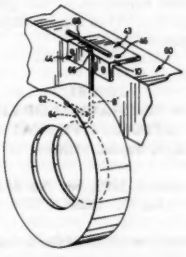
TIRE RETAINER FOR DOCK

Atis Bredovskis, 368 Rouge Hills Dr., West Hill, Ontario, Canada M1C 2Z5

Filed Oct. 10, 1989, Ser. No. 419,333

Int. Cl.[5] A47H *1/16*

U.S. Cl. 248—303 **1 Claim**



1. A tire retainer, for use in combination with a tire having walls and being U-shaped in cross-section, for the purpose of

retaining the tire between a vertical surface and the hull of a boat, said tire retainer comprising:

a hook retainer formed for securement to a dock or the like;

a single-piece hook and cleat assembly mounted on said hook retainer;

said hook of said single-piece hook and cleat assembly having a cradle to accept the edge of a tire wall and a free end to enter the interior space between the walls of the tire;

said cleat of said single-piece hook and cleat assembly integrally formed at the end opposite the free end of said hook for securing a rope or the like from a boat, said cleat bent sufficiently forwardly to extend over the cradle to assist in avoiding dislodgement of the tire as a result of upward forces, but not bent to an extent likely to result in damage to a boat hull; and

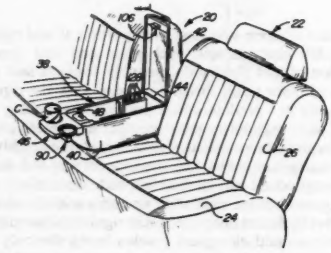
said tire retainer shaped to permit quick dismounting and remounting of the tire thereon, and to accommodate limited movement of the tire in response to upward forces without the tire being dislodged or the hook retainer being torn from its securement.

5,007,610

ARMREST COMPARTMENT WITH CUPHOLDER

Ned Christiansen, Three Rivers, and David Kellogg, Kalamazoo, both of Mich., assignors to Lear Seating Corporation, Southfield, Mich.

Filed Jan. 22, 1990, Ser. No. 468,079
Int. Cl.[5] A47C *7/62*
U.S. Cl. 248—311.2 **43 Claims**



1. A beverage container holding assembly for recessed storage in a vehicular armrest (20), said assembly comprising: girth support means (46) having a predetermined support width for surrounding and supporting the side wall of a beverage container (C) said girth support means (46) including a first articulated arm (54) moveable in a curvilinear path in response to actuation of said collapsing means (50); hinge means (48) defining a hinge axis (A) extending parallel to said support width for rotatably connecting said girth support means (46) to an armrest (20); and characterized by collapsing means (50) operatively connected to said girth support means (46) for automatically collapsing said support width to a smaller storage width in response to arcuate movement of said girth support means (46) about said hinge axis (A) to allow compact storage of said assembly in the armrest (20).

5,007,611

OPERATION MECHANISM OF LIFTER FOR AUTOMOTIVE SEAT

Shigeru Kanai, Tokyo, Japan, assignor to Tachi-S Co. Ltd., Tokyo, Japan

Filed Jan. 4, 1990, Ser. No. 461,086
Int. Cl.[5] B60N *1/02*
U.S. Cl. 248—422 **6 Claims**

1. An operation mechanism of a lifter for an automotive seat, comprising:

a drive mechanism for raising and lowering a seat frame of said seat;

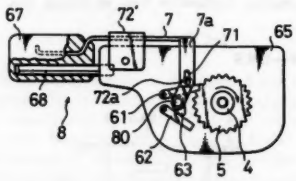
a drive shaft connected with said drive mechanism;

a gear fixed on said drive shaft;

a housing which is rotatably supported on said drive shaft, said housing has an operation lever connected integrally therewith;

a pair of first and second latch pawls provided within said housing in such a manner that said first latch pawl is to be engaged with one side of said gear so as to permit said gear to rotate only in a one direction, and said second latch pawl is to be engaged with the other side of said gear so as to permit said gear to rotate only in a direction opposite to said one direction;

a cam means fixed on a shaft which is rotatably secured within said housing an arm, having a dependent leg, which is so arranged that its one end is operatively connected with said cam means whereas its other end extends towards said operation lever, and wherein there is provided a link means between said arm and said cam such that one end of said link means is fixed on said shaft while the other end of said link means is pivotally connected



with said one end of said arm, whereby forward and backward movement of said arm causes said link means to rotate in same direction about said shaft, which causes rotation of said cam means by said shaft to disengage one of said first and second latch pawls from said gear, with the other of them remaining in engagement with said gear;

an arm which is so arranged that its one end is operatively connected with said cam means whereas its the other end that extends towards said operation lever;

wherein said operation lever includes a support rod and a handle attached slidably on said support rod, such that said handle is movable along said support rod in a longitudinal direction thereof, and wherein, to said handle is connected said the other end of said arm, whereby drawing forwards and backwards said handle along said longitudinal direction of said operation lever results in actuating said cam by said arm to thereby selectively disengage one of said first and second latch pawls from said gear, and set a rotational direction of said gear to actuate said drive mechanism to effect desired one of raising and lowering motions of said seat frame.

5,007,612

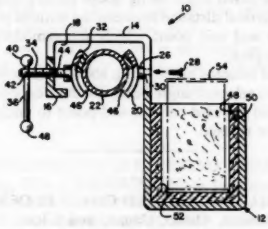
RAIL MATE

Robert A. Manfre, 389 Hendrickson Ave., Valley Stream, N.Y. 11580

Filed Apr. 23, 1990, Ser. No. 512,879
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—558 **6 Claims**

1. A rail mate for a boat handrail of either cylindrical or rectangular shape comprising a main body providing means for receiving and vertically stabilizing a cold beverage container and keeping said beverage container cool and for receiving and supporting food and other articles, a rail engaging clamp of inverted channel shaped integrally attached to said main body and comprising a base wall having opposite longitudinal side edges of the base wall a rail engaging lip projecting from the free end of the second side wall, parallel to the base part way towards the first side wall so that the side walls, base and lip define a rail receiving enclosure with a rail admitting mouth

formed between an adjacent free end of the lip and the first side wall, the beverage receiving and stabilizing means and the food receiving and supporting means being formed on an extension of the first side wall remote from the base wall, first and second clamp members releasably fastened to respective side walls so as to extend within the enclosure, means to advance one clamp



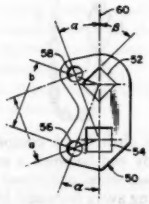
member relatively towards the other clamp member into cooperative clamping engagement with cylindrical boat rail of substantially smaller cross sectional size than the enclosure, whereby, after removal of the clamp members, a boat rail of rectangular shape inserted through the mouth can be received in the enclosure in a force-fit to extend along the channel engaged by all four sides thereof.

5,007,613

VALVE AND ACTUATOR APPARATUS ALLOWING MULTIPOSITION RELATIONSHIP

James E. Barker, Sauk Rapids, and Timothy J. Cash, Little Falls, both of Minn., assignors to General Signal Corporation, Stamford, Conn.

Filed Aug. 20, 1990, Ser. No. 569,687
Int. Cl.[5] F16K *5/00, 31/16*
U.S. Cl. 251—58 **30 Claims**



1. A linkarm apparatus for joining an associated valve having a rotatable mounted first shaft on which a butterfly is mounted and an associated actuator having a second shaft which reciprocally moves in a linear path, said apparatus including:

a plate having first and second means for engaging the first shaft and first and second means for engaging the second shaft, said first and second means for engaging the first shaft including means limiting engagement between said first shaft and said first and second means for engaging the first shaft to specific angular positions, said specific angular positions being rotated an angle beta from each other.

5,007,614

PRESSURE RESPONSIVE TWO-WAY SHUT-OFF VALVE

Hanford N. Lockwood, Jr., San Mateo, Calif., assignor to Hanford N. Lockwood, San Mateo, Calif.

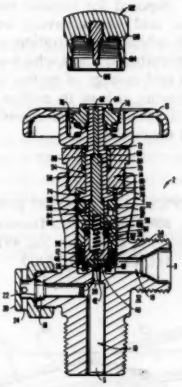
Continuation of Ser. No. 370,219, Jun. 22, 1989, Pat. No. 4,911,403. This application Jan. 12, 1990, Ser. No. 463,747
Int. Cl.[5] F16K *15/18*
U.S. Cl. 251—83 **7 Claims**

1. A shut-off valve for use with high pressure gas cylinder adapted to retain a residual gas pressure in the cylinder, the valve comprising:

an elongated, tubular housing having a first open end defining an axial port and a second open end defining an axially oriented access opening in general axial alignment with the port, the housing further defining a generally radially oriented port in fluid communication with the axial port via a passage formed by an axial portion communicating with the axial port, a radial portion communicating with the radial port, and an intermediate chamber fluidly connecting the portions, the axial portion terminating in a valve seat defining first and second seating surfaces;

a valve plug disposed in the chamber and axially moveable between a closed position in which it is proximate the valve seat and an open position in which it is remote from the seat, the plug including a relatively hard first sealing member adapted to sealingly engage the first seating surface, for forming a high pressure seal, and a relatively soft second sealing member adapted to sealingly engage the second seating surface for forming a low pressure seal;

a valve actuator including a stem having a portion rotatably and axially substantially immoveably mounted to the housing and an axially moveable, rotatable segment threadably engaging an interior of the housing so that rotation of the portion results in an axial movement of the



segment, the stem extending from the exterior of the housing through the access opening into engagement with an end of the plug facing towards the access opening so that axial movement of the stem segment towards the valve seat moves the sealing members into sealing engagement with the corresponding seating surfaces, the segment and the plug being further constructed so that the plug can move axially relative to the segment when the segment is relatively remote from the valve seat, and spring means for resiliently urging the plug into its closed position, the spring means being constructed so that a positiVe pressure differential between the axial port and the radial port in excess of the residual pressure moves the plug in opposition to the spring means towards its open position; and

selective coupling means directly between the segment of the stem and the plug including an axially movable pin operable from the exterior of the housing and extending through the access opening, a coupling member activated by the pin and movable between a first position in which the segment of the stem and the plug are axially movable relative to each other and a second position in which the segment of the stem and the plug are axially immovable relative to each other and are axially movable together as unit relative to the housing, for coupling the plug, when it is in its closed position, with the segment by moving the coupling member into its second position, so that, thereaf-

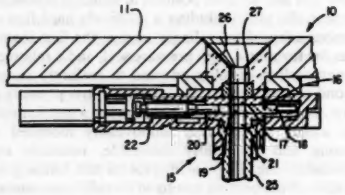
ter, operation of the actuator moves the plug from its closed position to its open position even when the pressure at the radial port exceeds the pressure at the axial port.

5,007,615

REFRACTORY SLIDE GATE ASSEMBLY AND METHOD

Mark C. Kernion, East Pittsburgh, and Ben Davies, deceased, late of Pittsburgh, both of Pa. by Evelyn Davies, executrix, assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 12, 1988, Ser. No. 283,253
Int. Cl.[5] B22D *41/08*
U.S. Cl. 251—368 23 Claims



1. A valve for high temperature molten metals comprising:

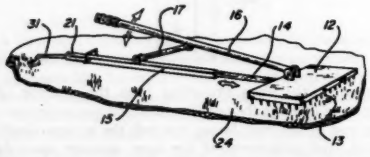
A pair of plates disposed for slidable movement therebetween, each of said plates having an aperture therethrough which when in registration permit passage of molten metal therethrough and which when out of registration prevent said passage of molten metal, at least one of said plates having at least its molten metal contacting surfaces of a refractory material consisting essentially of carbon bonded magnesite.

5,007,616

CARPET STRETCHING TOOL

Kelvin M. Scarpino, 508 Douglas Dr., Denver, Colo. 80221

Filed Mar. 9, 1990, Ser. No. 491,165
Int. Cl.[5] B25B *25/00*
U.S. Cl. 254—212 8 Claims



1. In a carpet stretching tool including a head having a plurality of needles projecting downwardly from a bottom surface to penetrate a carpet and engage said carpet, a rod member secured to said head and projecting away from said head, a tubular member slidably telescoping over said rod member and disposed in a horizontal position, lever and link means connected to said head and tubular member to move said head away from said tubular member, an improved anchor assembly mounted at the rear end of said tubular member, said anchor assembly comprising:

a support body sized to telescopically insert into an open rear end of said tubular member, said body having an inclined socket turned at a first selected angle to the longitudinal axis of the support body,

an elongated anchor member having a straight, elongated shank portion inserted into said socket and an inclined penetrating portion with the longitudinal axis of the inclined penetrating portion turned down at a second selected angle to the longitudinal axis of said shank portion so that said inclined penetrating portion is turned down at a forwardly and downwardly inclined selected third angle to a line perpendicular to said floor surface, a free end of said inclined penetrating portion having a beveled section terminating in a point to provide a relatively blunt penetrating surface for piercing the carpet and engaging the floor surface for anchoring the rear end of said tubular member to said floor surface during the stretching of the carpet away from the anchor member upon the actuation of said lever and link means,

said first selected angle being about twelve degrees to provide a vertical distance between the bottom of said tubular member and said point which accommodates relatively thick carpets,

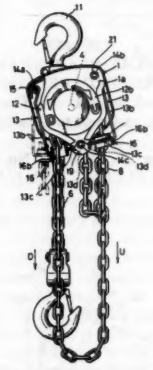
said second selected angle being about fifty-two degrees and said third selected angle being about twenty-six degrees to cause said beveled section and point to anchor firmly in said floor surface.

5,007,617

HAND-OPERATED CHAIN BLOCK

Yosaku Nishimura, Osaka, Japan, and Glenn S. Smith, Issaquah, Wash., assignors to Vital Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 3, 1989, Ser. No. 389,602
Int. Cl.[5] B66D *1/28*
U.S. Cl. 254—372 4 Claims



1. A hand-operated chain block comprising a load sheave rotatably supported by and between a pair of side plates, a hand chain, a hand chain wheel positioned a first surface of one of said side plates facing away from said load sheave mechanically coupled to said load sheave, and enclosing means for substantially enclosing entire periphery of said hand chain wheel, wherein

said enclosing means consists of a plurality of stays, a hand chain wheel cover, a pair hand chain guide plates, and a guide plate fixing member,

said plurality of stays are mounted on said first surface of one of said side plates about said hand chain wheel, a first and a second stay are positioned above the axis of rotation of said hand chain wheel when said hand-operated chain block is suspended from above, while a third stay is positioned beneath the axis of rotation of the hand chain wheel,

said hand chain wheel cover possesses a pie-shaped section, and is mounted on said plurality of stays so as to partially cover said hand chain wheel,

each of said hand chain guide plates is mounted on one of said first and second stays and covers a portion of said hand chain wheel which is perpendicular to its axis of rotation,

each of said hand chain guide plates includes a metal plate in a folded pattern with a pivotal support portion formed at an upper end portion thereof in a curved pattern, and with

a tubular hand chain guide portion formed at a lower end portion thereof,

said pivotal support portion of said hand chain guide plates encircling said first and second stays so that said hand chain guide plates are oscillatably suspended and supported by said first and second stays,

the hand chain wound on said hand chain wheel passes through said hand chain guide portion, being guided by said hand chain guide portion, and

said guide plate fixing member is mounted on said stay, so that part of the lower end portion of both hand chain guide plates may be simultaneously.

5,007,618

STANDING AND WALK STARTING APPARATUS

Fred G. Libby, R.D. #1 Box 508E, Mays Landing, N.J. 08330

Filed Feb. 20, 1990, Ser. No. 481,431

Int. Cl.[5] E04H *17/00*

U.S. Cl. 256—1 **18 Claims**

1. A device to aid a person to stand up from a sitting position on a seat and to start walking, the device comprising:

(a) a floor base panel comprising:

(i) a rear portion positionable proximate the rear of the seat.

(ii) two side portions, one on each side of the seat, and

(iii) a front portion of an area sufficient to allow the person to stand on in front of the seat,

(b) a pair of inclined members, one each over opposite side portions, each comprising:

(i) a rear end attached proximate the rear portion of the base panel, and

(ii) a length and angle of inclination of about twenty-five to about sixty degrees upwardly from the rear to the front sufficient to position a front end of each inclined member at a height and horizontal position to allow the person to grasp the front ends to pull with the person's handsdownwardly and rearwardly against the front ends to aid in rising from the seat.

(c) support means attached between the side portions of the base panel and the inclined members to vertically support the inclined members, and

(d) stability means to prevent horizontal movement of the base panel relative to the seat.

5,007,619

CHAIN LINK FENCE

Aldo Sibeni, 10 Executive Dr., Manhasset Hills, N.Y. 11040

Filed Jan. 13, 1989, Ser. No. 297,182

Int. Cl.[5] B21F *27/00*

U.S. Cl. 256—34 **22 Claims**

1. A chain link fence assembly, comprising: chain link fencing;

a bottom horizontal member engaged by the fencing;

a top horizontal member engaged by the fencing;

a plurality of horizontally spaced slats extending through spaces between the wires and connecting to the bottom horizontal member and engaging the top horizontal member;

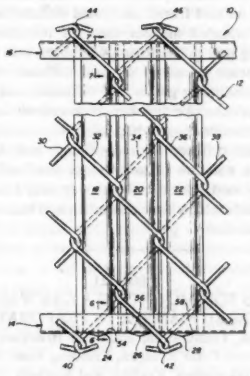
the slats having respective lock tabs formed therein and integral therewith projecting outwardly from the bottom ends thereof,

said bottom horizontal member having a plurality of horizontally spaced cutouts respectively receiving the horizontally spaced lock tabs;

wherein each lock tab has a pair of opposite recesses disposed on opposite edges thereof,

the recesses forming a pair of opposite projecting portions,

the projecting portions being flexible for insertion of the lock tab into its respective cutout and being resilient for returning to its original shape after insertion into the



cutout in order to lock the slat into the respective connecting cutout of the bottom horizontal member.

5,007,620

APPARATUS FOR BIOLOGICAL PROCESSING OF METAL-CONTAINING ORES

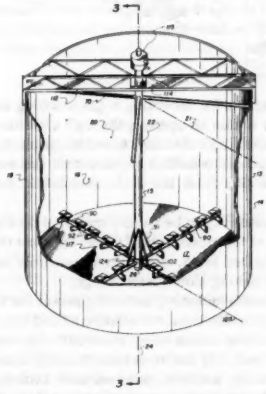
Robert C. Emmett, Jr., and Lawrence T. O'Connor, both of Salt Lake City, Utah, assignors to Envirotech Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 5,670, Jan. 21, 1987, which is a continuation-in-part of Ser. No. 827,324, Feb. 7, 1986, Pat. No. 4,732,608, and a continuation-in-part of Ser. No. 884,205, Jul. 10, 1986, Pat. No. 4,728,082. This application Aug. 23, 1988, Ser. No. 235,238

The portion of the term of this patent subsequent to Mar. 1, 2005, has been disclaimed.

Int. Cl.[5] C22B *3/02*

U.S. Cl. 266—168 **11 Claims**



9. A reactor for use in processing metal-ladened solids through use of a bioleaching process, said reactor comprising:

a containment means, having a base member, for containing a metal-bearing solids slurry;

an upright rotatable center shaft rotatably mounted within said containment means;

a plurality of radial arms mounted on said center shaft, above said base member;

a frame support stationarily mounted within said containment means elevationally above said radial arms, said frame having an open lattice configuration;

a plurality of flexible porous membrane diffusers spacedly mounted on said frame, each said diffuser having a horizontally oriented diffuser face for introducing oxygen-containing gas, in the form of bubbles, into said slurry;

a supply means mounted on said diffusers for supplying oxygen-containing gas to said diffusers; and

a plurality of rake-like members mounted on said radial arms to be rotatable therewith, said rakes being positioned below said diffusers and proximate said base member, wherein a rotation of said center shaft effects a raking action by said rake members over said base member to sweep solids which have settled on said base member from said solids slurry.

5,007,621

APPARATUS FOR MOUNTING A GAS WASHING SINK IN A CENTERED MANNER IN PERFORATED BRICK

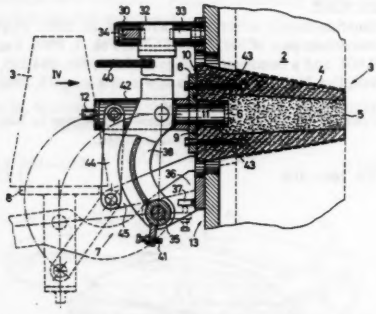
Hans Rothfuss, Taunusstein; Raimund Brückner, Engenhahn-Niedernhausen; Peter Keutgen, Kreuzau; Josef Seeger, Düren; Manfred Winkelmann, Krefeld, and Herbert Metzger, Duisburg, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 28, 1989, Ser. No. 413,673

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1988, 3833504

Int. Cl.[5] C21C *5/48*

U.S. Cl. 266—220 **66 Claims**



1. An apparatus for mounting a gas washing sink in a centered manner within an opening through a perforated brick in a wall of a metallurgical vessel, to enable gas to be introduced through the sink into molten metal within the vessel, and for removing the sink from the perforated brick, said apparatus comprising:

a support assembly to be fixedly mounted on the exterior of the wall of the metallurgical vessel adjacent the opening in the perforated brick, said support assembly including two columns having slots therethrough;

fastening means including mounting means for mounting the sink at a position centered relative to said fastening means, said fastening means being mounted with respect to said support assembly for movement relative thereto between an operating position, whereat said fastening means is centered with respect to the opening through the perforated brick and thereby the sink is pressed into the opening through the perforated brick in a centered manner, and a maintenance position, whereat the sink is withdrawn from the opening through the perforated brick, said fastening means comprising a cross member having opposite ends with bores therethrough, said columns extending through respective said bores, and said cross member being slidable in opposite directions, relative to said columns;

means, operable between said support assembly and said fastening means, for moving said fastening means and thereby the sink relative to said support assembly to said operating position, said moving means comprising wedges drivable into said slots and operable against said cross member to move said cross member to said operating position; and

withdrawal means, operable between said support assembly and said fastening means, for moving said fastening means and thereby the sink relative to said support assembly from said operating position to said maintenance position.

5,007,622

AUTOMOBILE SUN VISOR HINGE SPRING

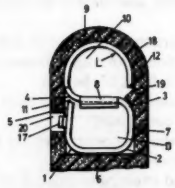
Carlos Gabas, Barcelona, Spain, assignor to Industrias Techno-Matic, S.A., Barcelona, Spain

Filed Mar. 16, 1990, Ser. No. 495,467

Claims priority, application Spain, Mar. 17, 1989, 8900980

Int. Cl.[5] F16F *1/18*; E05C *5/00*; B60J *3/00*; F16B *21/00*

U.S. Cl. 267—158 **4 Claims**



1. A spring for automobile sun visor hinge, comprising a member formed from a resilient metal sheet of a substantially rectangular profile by successively folding the sheet to substantially 90° about successive first, second, third and fourth rounded edges, said member including first, second, third and fourth generally rectangular portions and a channel-shaped curved portion, said first rectangular portion having a free edge located relatively closely adjacent to the fourth rounded edge that forms one end of the fourth rectangular portion and separates said fourth rectangular portion from said channel-shaped curved portion, said channel-shaped curved portion having a free end edge located relatively closely adjacent to the third rounded edge that forms another end of said fourth rectangular portion and separates said fourth rectangular portion from the third rectangular portion.

5,007,623

METHOD FOR FEEDING THE PRIMARY WEB OF A MINERAL WOOL WEB BY MEANS OF A PENDULUM CONVEYOR ONTO A RECEIVING CONVEYOR AND AN ARRANGEMENT OF SUCH A PENDULUM CONVEYOR

Matti Unkuri, and Tom Nurmi, both of Pargas, Finland, assignors to Oy Partek AB, Pargas, Finland

PCT No. PCT/FI87/00151, § 371 Date May 8, 1989, § 102(e) Date May 8, 1989, PCT Pub. No. WO88/03509, PCT Pub. Date May 19, 1988

PCT Filed Nov. 11, 1987, Ser. No. 354,433

Claims priority, application Finland, Nov. 12, 1986, 864613

Int. Cl.[5] B65H *45/10*

U.S. Cl. 270—39 **8 Claims**

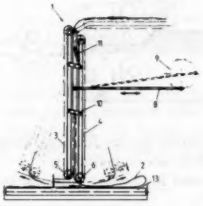
1. A method for making a mineral wool web, comprising:

(a) providing a receiving conveyor having a generally horizontal, upwardly presented carrying run which advances longitudinally in a given direction;

(b) providing a pendulum-type conveyor arrangement which includes two generally vertically arranged endless conveyor belts which are disposed laterally adjacent one another, relative to said given direction, above said carry-

ing run of said receiving conveyor, with respective carrying runs disposed in spaced, confronting relation, with the endless conveyor belts respectively entrained about respective upper and lower rollers rotating in respective directions to cause said spaced, confronting carrying runs of said endless conveyor belts to advance downwardly towards said carrying run of said receiving conveyor, whereby said pendulum-type conveyor has a carrying gap with an upper inlet end and a lower outlet end;

(c) while oscillating said pendulum-type conveyor assembly transversally of said given direction so as to reversingly sweep said outlet end of said carrying gap from adjacent one side edge of said carrying run of said receiving conveyor, to adjacent an opposite side edge of said carrying run of said receiving conveyor, continuously feeding a primary web of uncured mineral wool into said inlet end of said carrying gap between said carrying runs of said



endless conveyor belts of said pendulum-type conveyor arrangement, whereby said primary web is fed downwards by said carrying runs of endless conveyor belts and out onto said carrying run of said receiving conveyor so as to progressively provide on said carrying run of said receiving conveyor a multiple layer web of successively laid zig-zag folds of said primary webs of uncured mineral wool advancing in said given direction;

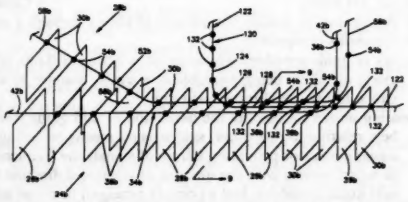
(d) During substantially all of each half cycle of oscillation of said pendulum-type conveyor assembly, in which a respective one of said endless conveyor belt leads and a respective other said endless conveyor belt trails said carrying gap, causing the respective said trailing endless conveyor belt to have said lower roller thereof disposed closer to, yet spaced above, said carrying run of said receiving conveyor than is said lower roller of the respective said leading endless conveyor belt.

5,007,624

SHEET MATERIAL HANDLING APPARATUS AND METHOD

Mohanjit S. Chandhoke, Clinton, N.Y., assignor to AM International Incorporated, Chicago, Ill.

Filed May 25, 1989, Ser. No. 357,054
Int. Cl.[5] B65H *39/00*
U.S. Cl. 270—52 **60 Claims**



1. Sheet material handling apparatus comprising a plurality of hoppers for holding sheet material, said plurality of hoppers including a first group of hoppers and a second group of hoppers, a conveyor assembly defining a plurality of collating spaces movable past each of said hoppers in turn, first feed means for feeding sheet material from the first group of hoppers to each of said collating spaces in turn during movement of said collating spaces past the first group of hoppers to sequentially form a first series of sheet material assemblages, second feed means for feeding sheet material from the second group of hoppers to each of said collating spaces in turn during movement of said collating spaces past the second group of hoppers to sequentially form sheet material assemblages of a second series of sheet material assemblages, first gripper conveyor means for sequentially gripping sheet material assemblages of the first series of sheet material assemblages being transported by said conveyor assembly at a first delivery location, for sequentially conveying the sheet material assemblages of the first series of sheet material assemblages to a receiving location, and for sequentially releasing sheet material assemblages of the first series of sheet material assemblages at the receiving location in an interleaved relationship with sheet material assemblages of the second series of sheet material assemblages, said first gripper conveyor means including a first plurality of grippers each of which is operable from an open condition to a closed condition to clampingly grip a sheet material assemblage of the first series of sheet material assemblages at the first delivery location and operable from a closed condition to an open condition to release a sheet material assemblage of the first series of sheet material assemblages at the receiving location in an interleaved relationship with a sheet material assemblage of the second series of sheet material assemblages, second gripper conveyor means for sequentially gripping sheet material assemblages of the second series of sheet material assemblages being transported by said conveyor assembly a second delivery location, for sequentially conveying the sheet material assemblages of the second series of sheet material assemblages to the receiving location, and for sequentially releasing sheet material assemblages of the second series of sheet material assemblages at the receiving location in an interleaved relationship with sheet material assemblages of the first series of sheet material assemblages, said second gripper conveyor means including a second plurality of grippers each of which is operable from an open condition to a closed condition to clampingly grip a sheet material assemblage at the second delivery location and operable from a closed condition to an open condition to release a sheet material assemblage of the second series of sheet material assemblages at the receiving location in an interleaved relationship with a sheet material assemblage of the first series of sheet material assemblages.

5,007,625

SELECTABLE SHEET OFFSETTING

Henry T. Kremers, Rochester, and Khalid M. Rabb, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1989, Ser. No. 398,858
Int. Cl.[5] B42B *2/00*
U.S. Cl. 270—53 **16 Claims**

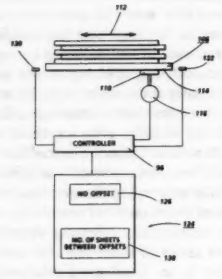
1. An apparatus for regulating offsetting stacks of sheets reproduced from at least one original document, including:

means for controlling offsetting of adjacent stacks of sheets from one another so that in one mode successive stacks of sheets are offset from one another and in another mode offsetting of the stacks of copy sheets from one another is inhibited, said controlling means includes means for selecting the number of sheets of each stack to be offset from one another;

means for receiving and supporting the sheets; and

means, responsive to said controlling means, for moving said receiving and supporting means at selected intervals to offset each stack from one another, said moving means being de-energized in response to said controlling means

inhibiting offsetting of the stacks of copy sheets from one another, wherein the sheets of each stack are uncollated



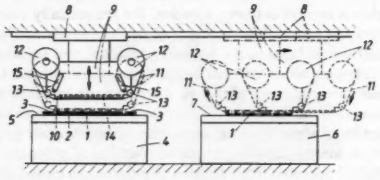
and said controlling means energizes said moving means to offset successive stacks of uncollated sheets.

5,007,626

APPARATUS FOR PICKING UP A FLAT WORK PIECE FROM AN ADHERING SUBSTRATE

Gottfried Blaimschein, Arnhalmweg 33, A-4407 Steyr, Austria

Filed Mar. 7, 1990, Ser. No. 490,054
Claims priority, application Austria, Mar. 17, 1989, 614/89
Int. Cl.[5] B65H *3/20*
U.S. Cl. 271—33 10 Claims



1. An apparatus for picking up a flat work piece from a substrate to which it adheres, which comprises

(a) a pickup table having a surface for receiving the substrate carrying the flat work piece,

(b) a receiving table spaced from the pickup table and having a surface for receiving the flat work piece picked up from the substrate, and

(c) a vertically adjustable tool carrier movable between the tables and carrying a pickup device comprising

(1) a pressure platen configurated to conform to the flat work piece and having opposite ends,

(2) an adhesive strip extending over the pressure platen between the ends thereof,

(3) two guide rollers respectively recessed from the opposite ends of the pressure platen, the guide rollers being arranged to guide the adhesive strip under tension over the pressure platen, and

(4) two reeling drums receiving respective ends of the adhesive strip beyond the guide rollers and rotatable to displace the adhesive strip in an operating direction by reeling the adhesive strip on one of the drums and unreeling the same from the other drum,

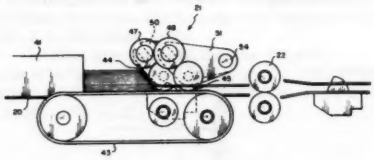
(5) the tool carrier being arranged to be lowered until the adhesive strip contacts the flat work piece and then picks up the flat work piece from the substrate on the pickup table surface upon raising the tool carrier, to be moved to the receiving table with the picked-up flat work piece adhering to the adhesive strip and then to be lowered until the flat work piece rests on the receiving table surface, and the adhesive strip is displaceable parallel to the receiving table surface and in a direction opposite to the direction of the tool carrier movement whereby the adhesive strip is pulled off the flat work piece resting on the receiving table surface.

5,007,627

SCUFF SHEET SEPARATING DEVICE

John Giannetti, Penfield; Jerry F. Sleve, Henrietta, and Robert H. Shea, Victor, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 137,775, Dec. 24, 1987, Pat. No. 4,844,435. This application Jun. 15, 1989, Ser. No. 366,399
The portion of the term of this patent subsequent to Jul. 4, 2006, has been disclaimed.
Int. Cl.[5] B65H *3/04*
U.S. Cl. 271—35 9 Claims



1. A sheet separating device for separating a sheet from a stack, said separating device including

feed means located in contact with the outside sheet of a received stack,

retard means positioned in contact with said feed means at the leading edge of the stack to prevent double feeding along a feed path between said retard means and said feed means,

said retard means including at least one rotatable retard member and a brake for said retard member,

the coefficients of friction of the feed means and of the retard member being greater than that of the sheets to be fed,

the brake exerting a braking force upon rotation of the retard member sufficient to prevent rotation when two or more sheets are in said path but permitting rotation when only one or no sheets are present in said path, and

a rigid pivot arm supporting said retard means, said pivot arm being pivotable about a pivot located downstream of said retard means, on the same side of the feed path as the retard means and separated from such path by a distance sufficient to cause rotation of the retard means about said pivot into a fed sheet in response to a force against the retard means parallel to the path.

5,007,628

APPARATUS FOR SENSING SHEETS

John A. Skinner, Hampshire, England, assignor to De La Rue Systems, Ltd., United Kingdom

Filed May 26, 1989, Ser. No. 358,202
Claims priority, application United Kingdom, May 31, 1988, 8812893
Int. Cl.[5] B65H *7/02*
U.S. Cl. 271—263 9 Claims

1. Apparatus for sensing the passage of sheets through a nip, said apparatus comprising:

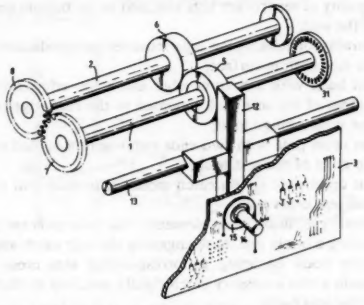
a pair of guide members whose surfaces define said nip, said guide members being movable in a cyclic manner to advance the sheets through said nip;

sensing means for sensing the deflection of said guide members relative to one other, said sensing means including a signal generator providing a train of signals the frequency of which varies with the amount of relative deflection of said guide members, and a counter arranged to count said signals from said signal generation during an interval of predetermined length;

detecting means responsive to the output of said sensing means to establish the presence or absence of a sheet

between said guide members as a function of a count supplied from said sensing means; and

said sensing means including a substantially flat coil and a core so mounted that relative displacement of said guide members by the passage of a sheet causes relative move-



ment between said core and said coil, and said coil being connected to said signal generator and effective for controlling said frequency of said signal generator in accordance with the degree of penetration of said core through said coil.

5,007,629

APPARATUS FOR CONVEYING SUBSTANTIALLY FLAT PRODUCTS, ESPECIALLY PRINTED PRODUCTS

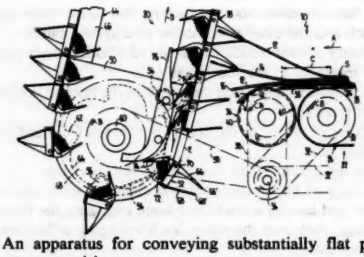
Jürg Eberle, and Hans-Ulrich Stauber, both of Hinwil, Switzerland, assignors to Ferag AG, Hinwil, Switzerland

Filed Jan. 3, 1989, Ser. No. 292,989

Claims priority, application Switzerland, Jan. 8, 1988, 50/88

Int. Cl.[5] B65H *5/02*

U.S. Cl. 271—277 **22 Claims**



1. An apparatus for conveying substantially flat printed products, comprising:

an infeed device for the infeed of products in the imbricated formation in which a pair of two superposed products are laid one on top of the other such that all like parts coincide, and in which said pair of two superposed products bear in imbricated formation upon a pair of upstream products with respect to a predetermined direction of travel of the imbricated formation;

said infeed device defining a conveying plane for the products and delivering the products to a take-over region;

a conveying device having a predetermined direction of travel;

said conveying device being provided with individually controllable grippers arranged in succession in said predetermined direction of travel of said conveying device;

said individually controllable grippers serving for engaging the infed products at leading product edges at the take-over region;

said predetermined direction of travel of the conveying device extending from an underside of the products upwardly and transversely with respect to the conveying plane of the infeed device; and

a separation device for spacing from one another at the take-over region the leading edges of the pairs of superposed products in order to introduce into each gripper a single product.

5,007,630

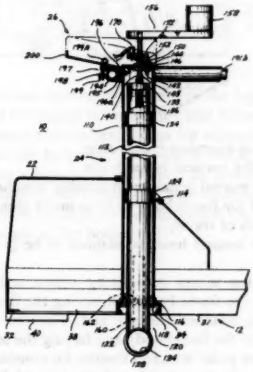
EXERCISE TREADMILL

Kenneth G. Real, Redmond, and Gary M. Bang, Edmonds, both of Wash., assignors to Precor Incorporated, Bothell, Wash.

Filed Oct. 7, 1988, Ser. No. 255,546

Int. Cl.[5] A63B *22/02*

U.S. Cl. 272—69 **30 Claims**



1. An exercise treadmill, comprising:

(a) a frame structure;

(b) a deck for supporting an endless belt defining a running surface, the deck mounted on the frame structure;

(c) a self-contained lift mechanism extending upwardly from a forward, central portion of the frame structure to extend upwardly a substantial elevation above the running surface for raising and lowering the forward portion of the treadmill;

(d) wherein the self-contained lift mechanism comprises:

(i) an elongate outer post assembly secured to a forward, central portion of the treadmill frame structure and extending upwardly a substantial elevation above the running surface;

(ii) a ground-engaging inner post assembly telescopically disposed within the outer post assembly to extend downwardly beneath the outer post assembly; and,

(iii) means for selectively sliding the inner post assembly relative to the outer post assembly to extend the lift mechanism to raise the forward portion of the treadmill, and to retract the lift mechanism to lower the forward portion of the treadmill;

(e) means for engaging and disengaging the self-contained lift mechanism with the frame structure from the underside of the frame structure; and,

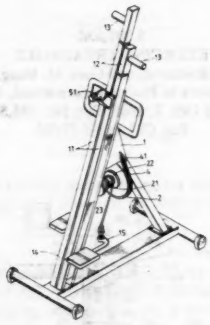
(f) means for detachably securing a lower end portion of the self-contained lift mechanism to the underside of the treadmill frame structure and means fixed to the ground engaging inner post assembly to prevent the inner post assembly from rotating relative to the treadmill frame structure while allowing the inner post assembly to raise and lower relative to the treadmill frame structure.

5,007,631

STRUCTURE OF CLIMBING EXERCISER WITH A COUNTER-WEIGHT FREEWHEEL MECHANISM

Leao Wang, No. 1, Lane 154, Charng Long Rd., Toupienkeng Taiping Hsiang, Taichung Hsien, Taiwan

Filed May 22, 1990, Ser. No. 526,590
Int. Cl.[5] A63B *23/04*
U.S. Cl. 272—70 **6 Claims**



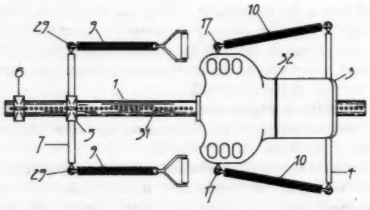
1. A climbing exerciser comprising:
(a) a generally vertical frame body
(b) first and second pedals each slidably attached to a lower portion of the frame body so as to move along a predetermined path of travel;
(c) first and second handles adapted to be gripped by the user;
(d) connecting means comprising a first rod slidably attached to the frame body and having the first handle and first pedal attached thereto; and, a second rod slidably attached to the frame body and having the second handle and second pedal attached thereto for connecting the first handle to the first pedal and the second handle to the second pedal such that movement of each pedal causes similar movement of each associated handle;
(e) a freewheel rotatably attached to the frame body; and,
(f) drive means interconnecting each pedal and the freewheel such that downward movement of each pedal along its path of travel causes rotation of the freewheel.

5,007,632

COMBINATION SIT-UP, ROWING, ARM, LEG AND FOOT EXERCISE DEVICE

William T. Wilkinson, P.O. Box 378, Chesapeake City, Md. 21915

Filed Oct. 12, 1989, Ser. No. 420,375
Int. Cl.[5] A63B *69/06, 21/04*
U.S. Cl. 272—72 **19 Claims**



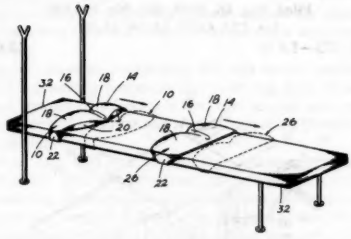
1. A combination sit-up, rowing, arm, leg, foot exercise device comprising:
a center pole with front and rear ends and top and bottom surfaces having a plurality of holes along the top surface and a corresponding plurality of holes along the bottom surface;
a seat with a front edge, two side edges, rear edge, and top and bottom surfaces rigidly attached to the center pole; a seat spring catch rigidly mounted to each side edge of the seat;
a plurality of seat rocker legs attached to the bottom surface of the seat;
a plurality of telescoping legs mounted perpendicularly to the seat bottom surface;
a seat back with a bottom edge and a top edge with the bottom of the seat back mounted to the rear edge of the seat with a hinge joint;
a seat cross pole with two ends removably mounted to the top edge of the seat back;
a seat cross pole spring catch mounted to each end of the rear seat cross pole;
a plurality of sit-up assist elements with two ends each end having a hook, one hook engaging the seat catch and the other hook engaging a corresponding seat cross pole catch; a rear accessory catch rigidly mounted to the back of the seat back;
a foot cross pole bracket engaging the center pole such that the foot cross pole bracket may transverse along the center pole in the lengthwise direction;
a foot cross pole with two ends rigidly attached to the foot cross pole bracket such that the foot cross pole is perpendicular to the center pole;
a foot cross pole bracket spring catch rigidly mounted to the foot cross pole bracket;
a foot cross pole bracket lock rigidly fixing the foot cross pole bracket to the center pole using one of the holes in the top and bottom surface of the center pole;
a center foot cross pole spring catch rigidly mounted to the foot cross pole bracket;
a center pole spring catch removably mounted to the center pole using one of the plurality of holes contained in the center pole between the seat and the foot cross pole bracket;
a leg tension elements attached to the center pole spring catch and the center foot cross pole spring catch;
a plurality of foot treadles with top and bottom ends pivotably mounted to the foot cross pole;
a foot treadle spring catch mounted on the bottom end of the foot treadle;
a front leg mounted to the center pole at the front end of the center pole;
a front leg spring catch mounted to the front leg;
a plurality of foot treadle tension elements with two ends, each end having a hook, one hook engaging the front leg spring catch and the other hook engaging a foot treadle spring catch;
a plurality of rowing tension elements with two ends, one end having a hook and the other end having a handle for grasping, the hook end of the rowing tension elements engaging the corresponding foot cross pole spring catch;
a rear support bracket removably attached to the center pole;
a rear support catch and lock which secures the rear support bracket to the center pole using the holes in the center pole;
a seat support arm which attaches to the rear support catch and the rear support bracket
a plurality of seat back tension elements mounted to the seat spring catch at one end and at the other end mounted to the rear support lock and spring catch.
a body belt consisting of two sections each with two ends, one end of each section attached to the seat back and a means for coupling the other ends to one another;
a plurality of rear arm tension elements attached to the rear support lock and spring catch.

5,007,633

SPINAL COLUMN SUPPORT ATTACHMENTS FOR A WEIGHT LIFTER'S BENCH

Brett J. Lemire, 5606 Laguna Oaks Dr., Elk Grove, Calif. 95758

Filed Apr. 20, 1990, Ser. No. 512,134
Division of Ser. No. 385,380, Jul. 27, 1989, Pat. No. 4,953,857
Int. Cl.[5] A63B *21/078*
U.S. Cl. 272—123 2 Claims



1. In combination, a weight lifter's bench suitable for a human to lay on in a supine position to lift weights, said bench having a first and a second spinal column support pad positioned on an upper surface of said bench, each said support pad being releasably and justably affixed stationary by strapping means to said bench:

each said support pad having a bottom surface placed against said upper surface of said bench, each said support pad having a top surface oppositely disposed from said bottom surface, each said sport pad further having two ends oppositely disposed from one another, each end placed adjacent a side edge of the bench, each said support pad further having two narrow edges oppositely disposed from one another extending between said two ends of said support pad;

each said support pad having a generally centered elongated narrow groove in said top surface extending lengthwise generally from one said side edge of said support pad to said oppositely disposed side edge of said support pad, said narrow groove dividing said top surface of said support pad into two generally rounded domes, said rounded domes sized and placed to support a human on either side of the spinal column thereby stabilizing and maintaining a generally normal spinal column curvature, said narrow groove sized and placed to provide open space for receiving and generally relieving pressure on an area of the spinal column during support on either side thereof by said rounded domes, said first support pad positioned on said bench toward a head end of said bench to support a human's curvical spinal curvature, said second support pad positioned on said bench to support the human's generally normal lumbar spinal curvature simultaneous with said first support pad supporting the human's cervical spinal curvature.

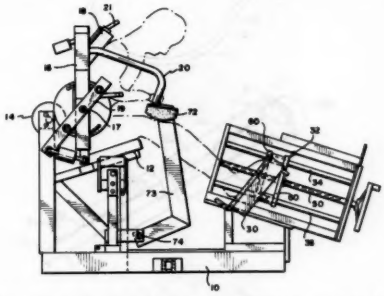
5,007,634

METHOD AND APPARATUS FOR RESTRAINING THE LEGS AND PELVIS FOR EXERCISING AND/OR TESTING THE LOWER TRUNK OF THE HUMAN BODY

Arthur A. Jones, 1155 NE. 77th St., Ocala, Fla. 32670

Continuation-in-part of Ser. No. 60,679, Jun. 11, 1987, Pat. No. 4,836,536, Ser. No. 236,367, Aug. 25, 1988, Pat. No. 4,902,009, and Ser. No. 181,372, Apr. 14, 1988, Pat. No. 4,834,365, which is a continuation-in-part of Ser. No. 60,679, , said Ser. No. 236,367, is a continuation-in-part of Ser. No. 60,679,. This application Jun. 5, 1989, Ser. No. 361,055
Int. Cl.[5] A63B *21/00*
U.S. Cl. 272—134 13 Claims

1. In combination with a machine for exercising lower trunk portions of the human body and including a seat, apparatus for restraining movement of the pelvis of a person seated on said seat, the apparatus comprising a pelvic pad located rearwardly of said seat to engage the body at the rear of the pelvis, and leg restraining apparatus for preventing movement of the pelvis comprising in combination, footrest means for supporting the feet with the legs bent at the knees and with the femurs extending downwardly and rearwardly of the seat, and a thigh restraining means movable between a first position spaced from the thighs and a second position overlying and engaging the



thighs to prevent upward movement of the legs while lower movement of the legs is prevented by said footrest means, and means mounting the footrest means for adjustable movement along a generally horizontal direction towards or away from the legs of the person to be restrained for placing the legs in a desired position to be restrained, and wherein said footrest means extends at an angle to the horizontal for supporting the feet at said angle to the horizontal.

5,007,635

EXERCISE DEVICE

Ralph Tiller, 1534 Old Creek Ct., Cardiff, Calif. 92007

Filed Apr. 12, 1989, Ser. No. 336,720
Int. Cl.[5] A63B *21/06, 21/00*
U.S. Cl. 272—117 14 Claims

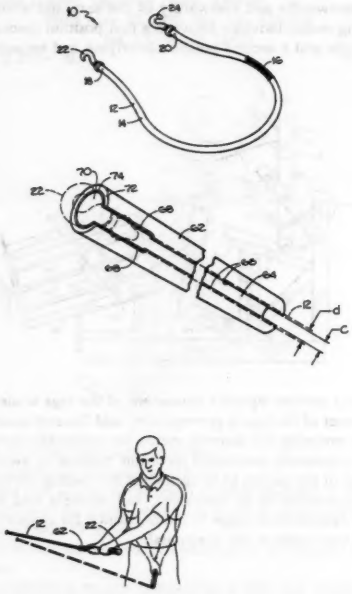
6. An exercise device, comprising:

an elongated elastic hollow tube having a first and second end, said hollow tube being filled with a fluid;

hook means fixedly mounted in said first and second ends for detachably securing said tube to said hook means and for sealing said fluid within said first and second ends of said tube;

said tube being filled with said fluid so that compression of one portion of said fluid filled tube results in elastic expansion of other portions of said tube; and

a substantially cylindrical hollow handle, said handle having a slot formed therein for removably receiving said first



end including said hook means into said hollow handle for holding said end of said tube within said handle.

5,007,636

GAME APPARATUS

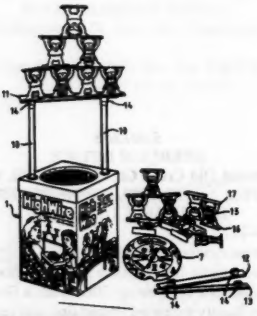
David A. Pagani, 10C Seaview Mansion, Discovery Bay, Lantau, Hong Kong

Filed Jan. 17, 1990, Ser. No. 466,202

Claims priority, application United Kingdom, Jan. 17, 1989, 8900991

Int. Cl.[5] A63F 7/36

U.S. Cl. 273—448 12 Claims



1. A Game Apparatus comprising a plurality of game apparatus elements, a container for the elements and a lid for the container, an upper surface of the container being provided with means for mounting at least some of the game apparatus elements upon the container so that the container functions as a base for the assembled game apparatus and the lid of the container including means for randomly choosing one of a plurality of instructions for use in playing a game with the game apparatus.

5,007,637

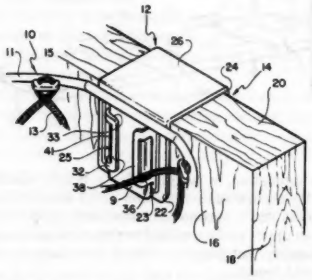
SELECTIVELY MOUNTABLE BASKETBALL HOOP STRUCTURE

Charles F. Foley, Charlotte, N.C., assignor to InnoLand, Inc., Pineville, N.C.

Filed Aug. 16, 1989, Ser. No. 394,640

Int. Cl.[5] A63B 63/08, 63/04

U.S. Cl. 273—1.5 R 13 Claims



1. A selectively mountable hoop structure for use in playing basketball-type games, comprising:

a hoop member defining an opening adapted for passage therethrough of a ball, said hoop member including a mounting portion; and

a bracket for selective mounting of said hoop member, said bracket being of a generally U-shape for selective alternative receipt of an exposed edge of a building door and like structural members of buildings, said bracket having means compatible with said mounting portion of said hoop member for receiving said mounting portion selectively in alternative first and second orientations relative to said bracket for selectively altering the relative verticality and horizontality of said hoop member, said mounting portion receiving means including a pair of spaced tabs projecting from said bracket and defining therebetween a first slideway for insertion of said mounting portion of said hoop member in said first orientation, said tabs having respectively aligned openings therethrough defining a second slideway for insertion of said mounting portion of said hoop member in said second orientation.

5,007,638

PITCHBACK DEVICE FOR ATHLETIC PRACTICE

Benjamin Yukl, 29308 Eddy Rd., Wickliffe, Ohio 44092

Filed Feb. 17, 1987, Ser. No. 15,422

Int. Cl.[5] A63B 69/40

U.S. Cl. 273—26 A 4 Claims

1. In a trampoline comprising

a closed, rigid planar frame having a plurality of substantially parallel and equal length frame legs extending therefrom for supporting said frame on a support surface,

said frame legs being attached to the perimeter of said frame to form the corners of a rectangular configuration, said planar frame having a resilient material within its perimeter, said material being stretched in the plane of said frame and attached thereto by elastic means to thereby form a rebound surface;

the improvement comprising support means for converting said trampoline to a ball rebound surface, said support means comprising

a support member comprising first and second parallel legs and a generally perpendicular cross leg, each of said first and second legs having a first and second end, and said first ends of said first and second legs being joined by said cross leg;

each of said first and second legs having its second end pivotally attached intermediate the ends of a respective frame leg at one end of said rectangular configuration; and

at least one elongated brace member having one of its ends pivotally attached to and intermediate the ends of a frame leg at the other end of said rectangular configuration;

said first leg of said support member having attachment means intermediate its ends for attachment of said brace member, said brace member having a plurality of attachment means along the length thereof; said attachment means on said first leg and said brace member cooperating to adjustably orient said planar frame in a plurality of inclined positions relative to a support surface; and

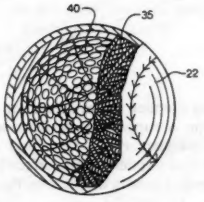
said support member and said brace member being pivotable into a substantially common plane beneath said planar frame such that said planar frame will be supported in a substantially horizontal position only by said frame legs.

5,007,639

GAME BALL

Dean R. Watson, Algonquin, Ill., and Thomas E. Gallagher, IV, Colorado Springs, Colo., assignors to T. G. & Watson, Inc., Algonquin, Ill.

Filed Sep. 10, 1990, Ser. No. 580,084
Int. Cl.[5] A63B *37/06, 37/12*
U.S. Cl. 273—60 R **7 Claims**



1. A game ball for use in playing such games as baseball, softball or the like comprising:

a plurality of film encased bubbles arranged to form a substantially spherical object; and

an outer covering surrounding said bubbles.

5,007,640

FINGER INSERT FOR A BOWLING BALL

David A. Bernhardt, 12219 Craven, Utica, Mich. 48087

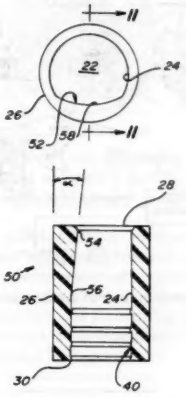
Continuation-in-part of Ser. No. 498,009, Mar. 23, 1990. This application Apr. 23, 1990, Ser. No. 513,443
Int. Cl.[5] A63B *43/02*
U.S. Cl. 273—63 A **14 Claims**

1. An insert for a finger hole in a bowling ball, comprising:

a tubular body having an outer wall surface adapted to be inserted into a finger hole of the bowling ball;

said body having an inner wall surface extending substantially coaxial to a central axis of said outer wall surface and defining first and second finger openings at opposite terminal ends of said body which are adapted to receive a bowler's fingertip therein;

ridge means for generating additional gripping force during delivery of the ball, said ridge means extending along the periphery of said inner wall surface adjacent said second finger opening;



surface means for providing greater fingertip contact area than is provided by said ridge means on a portion of said inner wall surface adjacent said first finger opening adapted for engagement with the bowler's fingertip, said surface means comprising a thickened finger pad which is a generally arcuate surface tapering from a maximum to a minimum thickness from said first finger opening toward said second finger opening, respectively, so as to blend into said inner wall surface.

5,007,641

GAMING METHOD

Charles B. Seidman, Merion, Pa., assignor to Take One Marketing Group, Inc., Merion, Pa.

Filed Sep. 20, 1989, Ser. No. 410,101
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—138 A **21 Claims**

1. A promotional gaming method comprising the steps of:

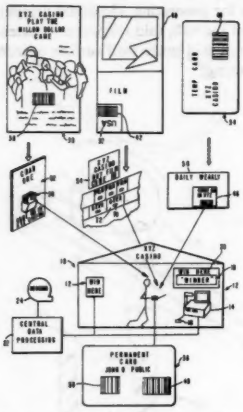
(a) distributing tokens to patrons;

(b) automatically reading a code on each of said tokens at a redemption location within an establishment upon presentation of said tokens by patrons and automatically comparing the code on each presented token with one or more predetermined winning codes;

(c) awarding prizes to only some of the patrons who present tokens bearing said code matching said one or more predetermined winning codes;

(d) said tokens including a multiplicity of tokens bearing a common machine readable code which common code matches said one or more predetermined winning codes, said step of awarding prizes including the step of randomly assigning prizes to patrons who present tokens bearing said common code, said step of randomly assigning said prizes being performed upon presentation of said

tokens, said step of randomly assigning said prizes including the step of actuating a random selection process in



response to presentation of a token bearing said common code.

5,007,642

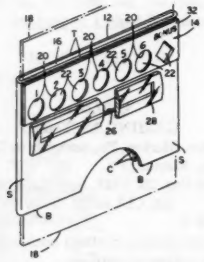
COMPARATOR

Mark Henry, 558 Ramona St., Sierra Madre, Calif. 91024, and Hillary Saenz, 724 E. Chestnut St., Glendale, Calif. 91205

Filed Mar. 15, 1990, Ser. No. 493,710

Int. Cl.[5] A63F *3/06*

U.S. Cl. 273—148 R **11 Claims**



1. A comparator for visually comparing a first series of the numbers written on the comparator with a second series of numbers imprinted on a sheet of paper, comprising:

(a) a backing member;

(b) facing means overlaying said backing member for cooperation therewith to define a passageway through which the sheet of paper can be passed, said facing means having a plurality of transversely spaced apertures adjacent said viewing means and further including:

(i) a writing surface accessible through said apertures, whereby the first series of numbers can be written on said writing surface; and

(ii) viewing means for viewing the second series of members imprinted on the sheet of paper as the sheet of paper is passed through said passageway.

5,007,643

GOLF CLUB HEAD

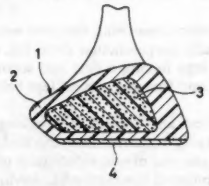
Takaharu Okumoto, Chigasaki; Tatsuo Nishimoto, and Hideaki Wakaki, both of Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1989, Ser. No. 431,120

Claims priority, application Japan, Nov. 4, 1988, 63-277429

Int. Cl.[5] A63B *53/04*

U.S. Cl. 273—167 R **5 Claims**



1. A golf club head comprising an outer shell made from a fiber-reinforced resin and an inner core made of a syntactic foam formed in the outer shell, said syntactic foam comprising a matrix resin containing glass microballoons ranging from 25 to 45 parts by weight per 100 parts by weight of the matrix resin and whiskers ranging from 3 to 8 parts by weight per 100 parts by weight of the matrix resin mixed therein.

5,007,644

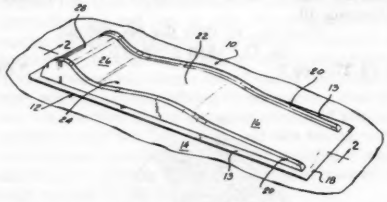
GOLF PUTTING PRACTICE TARGET

Edward A. Bluthardt, 6612 Lakepointe, Utica, Mich. 48089, and Jeffrey L. Goins, 55605 Card Rd., New Haven, Mich. 48048

Filed Apr. 23, 1990, Ser. No. 512,794

Int. Cl.[5] A63B *57/00, 67/02*

U.S. Cl. 273—178 B **12 Claims**



1. A golf putting practice target comprised of a target piece adapted to rest on a supporting surface; said target piece formed with an entrance ramp comprised of an upwardly ascending smooth and uninterrupted surface bounded by confining sidewalls spaced apart a distance on the order of several inches;

said entrance ramp rising at a very gentle inclination to a peak;

said entrance ramp thereafter descending into a curved intermediate depression, bounded at the rear by a back ramp surface rising to a peak at a height above said entrance ramp, said intermediate depression and back ramp being smooth and uninterrupted.

5,007,645

GOLF PRACTICE DEVICE

William Weigl, 1805 Conwood Dr., and George Churley, 174 Merry Robin Rd., both of Troy, Ohio 45373

Filed Aug. 29, 1989, Ser. No. 399,994

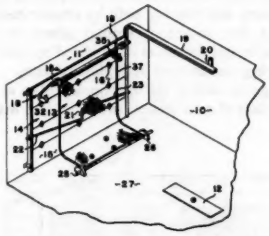
Int. Cl.[5] A63B *69/00*

U.S. Cl. 273—181 F **12 Claims**

1. A golf practice device for use within a garage and for mounting on the interior of a garage door in both a use condi-

tion and a storage condition while enabling raising and lowering of said door whether said device is in either of said use or storage conditions,

said device comprising a ball-striking net against which light-weight golf balls can be driven from a golfer's practice position within said garage, said net having a height generally at least as high as said door and a horizontal width greater than half the door height,



bracket means mounted on the interior upper half of the door for suspending the net at its upper edge inwardly of said door when in use condition whereby to arrest balls striking the net, and, when so suspended, being spaced inwardly from the door, said bracket means also supporting the net in storage condition on the inside of the door, and,

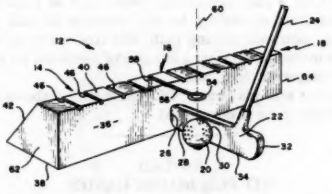
means for maintaining the bottom of the net inwardly of and away from the door when the net is in its use condition.

5,007,646

GOLF PUTTING PRACTICE DEVICE

James A. Baber, 6447 Via Arboles, Anaheim, Calif. 92807, and Joseph J. Cibere, 1541 Calle Artigas, Thousand Oaks, Calif. 91360

Filed Jul. 31, 1990, Ser. No. 560,782
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—183 E **10 Claims**



1. A golf putting practice device comprising:

a base having an elongated, generally vertical, planar putter guide surface;

at least a first groove formed in an upper face of said base and extending generally perpendicular to said putter guide surface; and

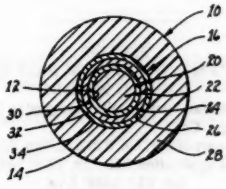
a sight adjustably positionable in said groove and having a sight loop formed at a first end of a sight arm, said sight arm extending outwardly from said base in a cantilever manner to position said sight loop above a sweet spot of a golf club when a toe portion of a golf club is in abutting engagement with said planar putter guide surface of said base of said golf putting practice device.

5,007,647

GOLF BALL AND METHOD OF MAKING SAME

James D. Gulick, Peoria, Ariz., assignor to Sports Glow, Inc., Scottsdale, Ariz.

Filed Dec. 15, 1989, Ser. No. 452,259
Int. Cl.[5] A63B *43/06, 37/12*
U.S. Cl. 273—213 **9 Claims**



9. A glow-in-the-dark golf ball comprising, in combination:

a core member having an exterior surface;

a cover encircling said core member and having an exterior surface; and

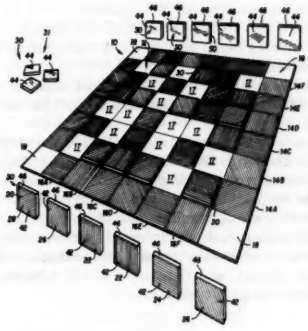
glow-in-the-dark glowing means continuously encircling said core member and located between said exterior surface of said core member and said exterior surface of said cover for receiving at least one of light and heat energy to generate a glow of light and for emitting said glow of light that is visible in a dark environment after receiving said at least one of light and heat energy.

5,007,648

GAME APPARATUS

Alvin F. Polan, 126 Spectator La., Owings Mills, Md. 21117

Filed Nov. 17, 1989, Ser. No. 437,690
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—236 **8 Claims**



1. A game apparatus, comprising:

(a) a playing board with 36 unmarked playing squares forming a square array having six horizontal ranks and six vertical rows,

(b) a border extending around the square array, the border having six border squares on each side of the square array adjacent to each rank and row, with one of four distinct indicia marked upon each border square, distinct indicia being marked throughout the border spares with no adjacent border square having a similar indicia;

(c) four sets of ten playing pieces, each having a front face and a back face, with each set of ten playing pieces having a common indicia marked on the front face matching one of the four distinct indicia marked upon the border squares; the four sets of ten playing pieces each having the

back face marked with a fifth indicia common to all four sets of ten playing pieces; and

(d) wherein a playing piece is selectively positioned each in turn upon one of the unused playing squares on the square array front face up without matching indicia on the front face of any adjacent playing piece or adjacent border indicia, and once played each playing piece remains in place on the selected playing square for the duration of the game.

5,007,649

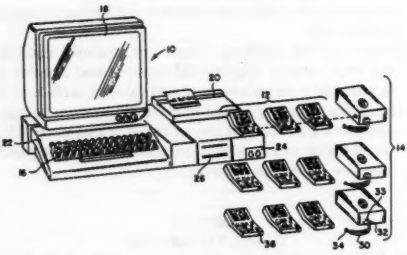
GAMING SYSTEM WITH SYSTEM BASE STATION AND GAMING BOARDS

John Richardson, San Diego, Calif., assignor to Selectro-Vision, Ltd., San Diego, Calif.

Continuation-in-part of Ser. No. 820,521, Jan. 16, 1986, Pat. No. 4,848,771. This application Mar. 28, 1989, Ser. No. 329,910

Int. Cl.[5] A63F *3/06*

U.S. Cl. 273—237 **30 Claims**



1. A method for managing money during the playing of a bingo game, including the steps of:

(a) electronically storing in a system base station the total number of bingo cards sold during the course of a gaming session comprised of a scheduled sequence of one or more successive, independent bingo games;

(b) electronically storing in a system base station the amount of all winning bingo card payouts made during said gaming session;

(c) electronically storing in a system base station a validation code which uniquely identifies each specific said gaming session;

(d) downloading said validation code and data representing at least one bingo card into at least one handset;

(e) electronically storing said validation code and said bingo card in memory means of said handset; and

(f) confirming a win condition of said handset by comparing said validation code electronically stored in said system base station with said validation code electronically stored in said handset, and producing a win indication if said validation codes are identical.

5,007,650

METHOD OF PLAYING A BOARD GAME OF COLLEGE SOCIAL LIFE

Keith Reed, 2211 Sweetbriar Rd., Morrisville, Pa. 18067, and Keith Coleman, 25 Spinythorn Rd., Levittown, Pa. 19506

Filed Sep. 21, 1989, Ser. No. 410,428

Int. Cl.[5] A63F *3/00*

U.S. Cl. 273—249 **4 Claims**

1. A method of playing a board game representing various social and/or non-academic aspects of college or university life, involving various physical interactions between the players or teams of said game and the consumption of beverages by said players or said teams of said game according to the rules of said game, comprising;

selection of a first player or team and subsequent players or teams by chance means,

said first player or team selecting a designated first playing piece,

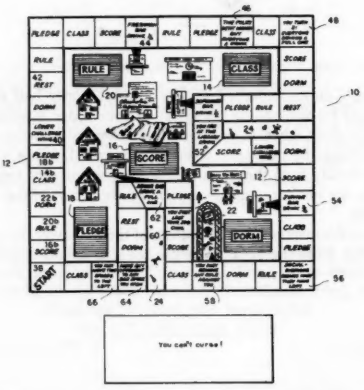
said subsequent players or teams selecting remaining playing pieces,

said first and said subsequent players or teams placing said first and said remaining playing pieces upon the starting point of the playing path of the game board of said board game,

said first and said subsequent players or teams in turn determining subsequent positions for said playing pieces within spaces along said playing path by chance means,

following a first subset or second subset of instructions contained in said spaces as determined by said positions of said playing pieces upon said playing path,

drawing a game card of the appropriate class as determined by said class of said second subset of said instructions, if



said position of said playing piece corresponds with one of said classes of said second subset of said instructions upon said playing path, said cards containing instructions for one of the following: physical interaction between players, consumption of beverages, rules imposing a physical limitation on a player drawing the card,

performing said physical interaction between said players or said teams, said consumption of said beverages by said players or said teams as required by said instructions and/or said game card, and/or abiding by any rule provided by a rule containing game card as required and appropriate according to said position of said playing piece upon said playing path, said first subset of instructions including removing any one of said rules for a particular player or team, and

continuing said playing of said game in the above manner until the game is completed.

5,007,651

KIT FOR BOARD GAMES

Stanley I. Mason, Jr., 61 River Rd.; Elizabeth L. Fuller, 72 River Rd., both of Weston, Conn. 06883, and Roy E. Doty, 35 Grey Hollow Rd., Norwalk, Conn. 06850

Filed Dec. 12, 1988, Ser. No. 282,747

Int. Cl.[5] A63F *3/00*

U.S. Cl. 273—256 **3 Claims**

1. A board game kit including

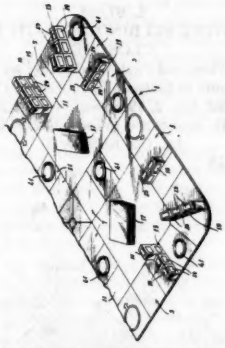
movable playing pieces,

movable barriers,

a game board, said board having a circumferential track thereon, said track including pluralities of sequential spaces to receive said movable pieces, as a player moves them around said track, said sequential spaces running the width of said track, and barrier spaces running across the

width of said tracks to receive said movable barriers, said barrier spaces being spaced from one another and positioned between pairs of said pluralities of sequential spaces,

said board including at least one diametrical track interconnecting opposite sides of said circumferential tracks, said diametrical track being formed of additional said sequential spaces to receive said movable pieces, and



said movable barriers being shaped for complementary, frictional interfit with one another such that said barriers may be secured to one another end to end or stacked one above another,

whereby said one or more of said movable barriers can be positioned in a said barrier space thereby providing variable height and length deterrents to moving said movable pieces in said circumferential track while playing said game.

5,007,652

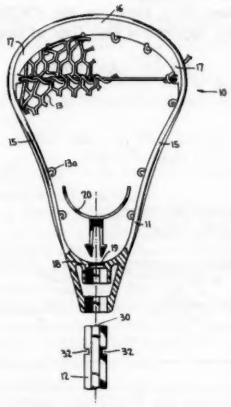
LACROSSE STICK

Richard B. C. Tucker, Baltimore; Jackie L. Davis, Aberdeen, and Fielding H. Lewis, Jr., Queenstown, all of Md., assignors to Wm. T. Burnett & Co., Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 414,258, Sep. 29, 1989, Pat. No. 4,940,243. This application Jul. 10, 1990, Ser. No. 550,562

Int. Cl.[5] A63B *59/02*

U.S. Cl. 273—326 **4 Claims**



1. A head for a lacrosse stick comprising a generally V-shaped frame adapted to receive a web, said frame being defined by two side walls joined at a juncture and diverging therefrom, a transverse wall joining the ends of said side walls opposite of said juncture, and tab means positioned on at least said side walls for securement of a web onto said frame, said tab means being integrally formed with at least said side walls, and constructed and arranged to have a slot therein to permit a web string to be snapped into said tab, said slot being constructed and arranged to retain said string.

5,007,653

HEAD REST STRUCTURE FOR BABY STROLLERS

Kin K. Chen, No. 24, Lane 53, Sec. 3, Anho Rd., Tainan City, Taiwan

Filed Mar. 26, 1990, Ser. No. 498,589

Int. Cl.[5] B62B *9/00*

U.S. Cl. 280—87.051 **1 Claim**

1. In baby strollers of the type having a cushioned head rest filled with foam material, a seat back, and securing means for supporting and mounting the combination of the seat back and the cushioned head rest on a frame of the baby stroller, wherein the improvements comprise:

said cushioned head rest comprising a base part and an upper part, said upper part having substantially an inverted U-shaped cross-section providing a cavity and having a pair of side surfaces extending along said foam material which is received within said cavity and outwardly extending rim portions at the base of said side surfaces, and base part extending below and across said upper part and said rim portions being fixedly secured to the underlying portions of said base part, said seat back being secured to one of said fixedly secured rim and base portions of said cushioned head rest; and

said securing means being disposed in said cavity directly under said foam material within said cushioned head rest and said base part sealing the cavity and thereby said foam material against leakage thereunto, said securing means extending through said base part and comprising a threaded fastener for engagement with the frame of the baby stroller.

5,007,654

TRUCK STEP

Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182

Filed Jun. 29, 1989, Ser. No. 373,250

Int. Cl.[5] B60R *3/02*

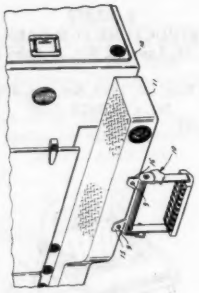
U.S. Cl. 280—166 **5 Claims**

1. For use in connection with a vehicle body structure, step means attachable to said vehicle body structure comprising:

a frame member having means for securing to the vehicle body structure, said frame member including an inverted U-shape bracket having spaced apart legs which are disposed in substantially vertical parallel planes, each leg having a substantially triangular aperture, one point of the triangular aperture extending downward with respect to the leg, and at least one leg having a V-shaped guide channel having a detent; and

a step member comprising a platform and substantially paral-

lel arms coupled to opposite sides of the platform, each said arm having an axial pin and at least one arm having a guide pin, said pins being disposed such that the guide pins are movable in the guide channels and the axial pins are received in the apertures and define a rotational axis of the step member, said axial pins being movable in the apertures to shift the rotational axis of the step member, said axis having a first position such that the axial pins are



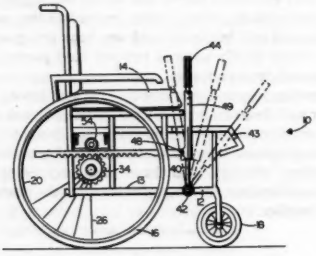
seated in the downwardly extending points of the apertures and the guide pins are engaged in the detent under the force of gravity and the platform is rigidly coupled to the frame member so that the platform may be used as a step, and a second position such that the axial pins are not seated in the downwardly extending points of the apertures and the guide pins are movable in the guide channel whereby the step member may be swung forwardly or rearwardly upon contact with an obstruction.

5,007,655

VARIABLE SPEED LEVER PROPELLED WHEELCHAIR

Mark Hanna, 2813 Bunch Walnuts Rd., Chesapeake, Va. 23322

Filed Jan. 5, 1990, Ser. No. 461,425
Int. Cl.[5] B62M *1/16*
U.S. Cl. 280—250.1 **13 Claims**



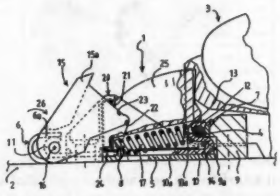
1. A manually-propelled device comprising:
a frame having a seat for supporting an individual;
means supporting said frame for locomotion of said device including a pair of wheels carried by said frame adjacent opposite sides thereof;
means for mounting said wheels for rotation relative to said frame; and
means carried by said frame and operable by the individual seated in the device for propelling said device in a forward direction, including at least one lever pivotally connected to said frame, a rotatable drive sprocket carried by said frame for rotating at least one of said wheels in a direction to propel the device in a forward direction, and means interconnecting said lever and said sprocket for rotating said drive sprocket to propel the device in the forward direction;
said interconnecting means including an element movable through two positions relative to and in engagement with said sprocket, said element in said first position thereof relative to said sprocket engaging and driving said sprocket, said element in said second position thereof relative to said sprocket engaging said sprocket in non-driving relation thereto thereby disconnecting the drive connection between said lever and said sprocket and freeing said one wheel for rotation.

5,007,656

CROSS-COUNTRY SKI BINDING WITH AUTOMATIC CLOSURE

Eric Girault, Seynod, and Paul Arnulf, Alby sur Cheran, both of France, assignors to Salomon S.A., Annecy Cedex, France

Filed Aug. 2, 1989, Ser. No. 388,387
Claims priority, application France, Aug. 5, 1988, 88 10773
Int. Cl.[5] A63C *9/20*
U.S. Cl. 280—615 **47 Claims**



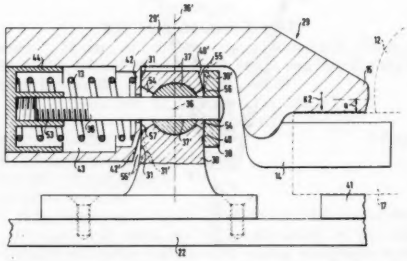
1. An automatic cross-country ski binding for a shoe or a boot having a traverse journal axle, said binding comprising a housing adapted to receive said journal axle, a latch being movable between a latching position and a position of insertion for latching said journal axle in said housing, wherein said latch is rotationally mounted about a rotational axis, and wherein said rotational axis of said latch is mounted for longitudinal displacement in the binding, said latch being elastically biased in longitudinal and rotational displacement by biasing means towards the latching position of said journal axle of the boot in said housing.

5,007,657

LATERALLY RELEASABLE BINDING UNIT

Martin Bogner, Ostfildern; Otto Harsányi, Leonberg, both of Fed. Rep. of Germany, and Henri Peyre, Saint Benin d'Azy, France, assignors to GEZE Sport International GmbH, Leonberg, Fed. Rep. of Germany

Filed Jul. 5, 1989, Ser. No. 375,783
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1988, 3825682
Int. Cl.[5] A63C *9/085*
U.S. Cl. 280—626 **9 Claims**



1. Laterally releasable ski safety binding unit for holding a front end of a ski boot on a ski, the binding unit comprising:

an upright carrier spigot fixed relative to the ski;
a release spring arranged substantially longitudinally on the ski and braced at one end on the carrier spigot, the other end exerting a release force having a substantial component in the longitudinal direction of the ski;
a sole clamp for holding the ski boot, the sole clamp having a receiving chamber remote from the ski boot for accommodating said release spring, and a limb configuration comprising one of (a) two side limbs and a hold down means comprising a clamp adjacent to said side limbs and (b) two side limbs and a hold down means, such that upon the release force exceeding a predetermined force exerted on the side limbs via the ski boot, said limbs swing outwardly sideways about a substantially upright pivot axis and thereby release the ski boot, the sole clamp being rotatably arranged on said carrier spigot mounted on the ski and vertically tiltably mounted about a transverse axis of the ski;
said release spring exerting a force having a downward component onto the hold down means to thereby press the hold down means with the force component against the top side of the sole of the ski boot;
a ball guide disposed within said carrier spigot and having a slide bore therein;
a draw rod passing through said slide bore;
a support disc secured to the rear of said draw rod against a substantially flat rear support surface of the carrier spigot, said support disc disposed between said draw rod and said carrier spigot and having a substantially flat counter surface in facing relationship with said rear support surface;
said draw rod extending into said receiving chamber and urged in the direction away from the ski boot by the front end of said release spring such that the support disc is pressed against said rear support surface;
the opposing, rear end of said release spring being braced against an abutment fixed relative to the sole clamp and having a substantially flat contact surface to thereby press said contact surface against a substantially flat front support surface of said carrier spigot;
the front and rear support surfaces of said carrier spigot and the counter and contact surfaces of the support disc and the abutment including cooperating tilted surface portions arranged to permit relative pivotal movements of said draw rod and thereby of said hold down means, about an axis transverse to the length of the ski such that within a predetermined vertical tilting region of the hold down means as a result of such pivotal movements, the hold down force is significantly reduced relative to the normal release hold down force.

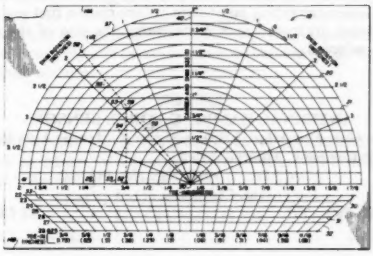
5,007,658

SHIM AND COMPUTERIZED CHART FOR SIMULTANEOUSLY ADJUSTING CAMBER AND TOE-IN

James L. Blechschmidt, Tempe; Robert D. Johnson, and Robert F. Powell, both of Mesa, all of Ariz., assignors to Shimco, Inc., Mesa, Ariz.

Filed Mar. 16, 1990, Ser. No. 494,963
Int. Cl.[5] B62D *17/00*
U.S. Cl. 280—661 **3 Claims**

1. Orientation apparatus for
selecting from a plurality of different sized tapered shims at least one selected shim to be positioned in the wheel assembly of a vehicle to alter the alignment of the assembly by adjusting the camber and toe-in of the wheel assembly by selected amounts, and,
determining the orientation of the selected shim necessary to alter the alignment of said wheel assembly by the selected amounts of camber and toe-in,
the wheel assembly including
an axle member,
spindle means attached to the axle member for rotatably receiving and carrying a wheel, and
bolts for removably, fixedly securing the spindle means to the axle member, the bolts each having an imaginary longitudinal centerline,
each of the tapered shims having a taper different from the taper of the other of the tapered shims and including
(a) a first generally smooth contact surface lying in a first imaginary plane;
(b) a second generally smooth contact surface lying in a second imaginary plane, the second imaginary plane being at an acute angle with respect to the first plane, the first and second imaginary planes intersecting along a line and each being perpendicular to a third common imaginary plane;
(c) at least one arcuate opening formed through the tapered shim;
each of the shims being interposed between the spindle means and the axle member in any of at least three operative positions to adjust the alignment of the wheel,
(d) a first operative position which adjusts the camber of the wheel;
(e) a second operative position which adjusts the toe-in of the wheel; and,
(f) a third operative position which simultaneously adjusts both the toe-in and camber of the wheel:
the arcuate opening being shaped, contoured and dimensioned such that
(g) the bolts pass through the opening when the shim is interposed between the spindle means and the axle member and the bolts are utilized to fixedly secure the spindle means to the axle member;



(h) when the spindle means is, with the shim interposed therebetween, loosely secured to the axle member with the bolts, the shim can be rotated about an axis generally parallel to the longitudinal centerline of one of the bolts;
said orientation apparatus including
(a) chart means correlating camber and toe-in adjustment values with the orientation of each of the shims and including
(i) a first graduated axis indicating toe-in values,
(ii) a second graduated axis perpendicular to said first graduated axis and indicating camber values, each of said values on said first and second axis representing a size of shim and representing the maximum amount by which said represented size of shim can adjust the toe-in and camber of the wheel assembly, said toe-in and camber values increasing by selected increments as the distance along said axes from the intersection of the axes increases,
(iii) arcuate alignment lines interconnecting equivalent values on said first and second axes, each of said alignment lines indicating the amount by which the toe-in and camber of the wheel assembly is altered when a shim of the size represented by the equivalent values interconnected by the alignment line is interposed between the spindle and the axle of said wheel assembly in a selected position with respect to said bolts, said selected position being obtained by rotating the shim with respect to said bolts about said axis

generally parallel to the longitudinal centerline of one of said bolts,

(b) dial means including

(i) an outer peripheral edge,

(ii) a point of rotation on said dial means within said outer peripheral edge,

(iii) a first rule line passing through said point of rotation, and,

(iv) a second rule line passing through said point of rotation and perpendicular to said first rule line,

(c) mounting means for mounting said dial means on said chart means for

(i) movement in a first direction parallel to said first graduated axis,

(ii) movement in a second direction parallel to said second graduated axis, and,

(iii) rotation about said point of rotation,

said orientation apparatus permitting a shim size to be selected by

determining the desired toe-in and camber change of the wheel assembly of a vehicle,

moving said point of rotation of said dial means along said second graduated axis to the value on said second graduated axis corresponding to said desired toe-in value,

moving said dial means to a first reference position by moving said point of rotation away from said second graduated axis and parallel to said first graduated axis a distance equal to the distance from said second graduated axis of the value on said first graduated axis corresponding to said desired camber change, and

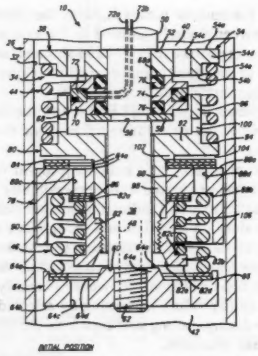
selecting the one of said arcuate alignment lines closest to said first reference position, said selected arcuate line interconnecting equivalent values on the first and second graduated axes representing the size of the shim selected.

5,007,659

INTERNAL DAMPING FORCE SENSOR

Yoram Guy, Ann Arbor, Mich., assignor to Monroe Auto Equipment Company, Monroe, Mich.

Filed Mar. 7, 1990, Ser. No. 489,920
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—707 **33 Claims**



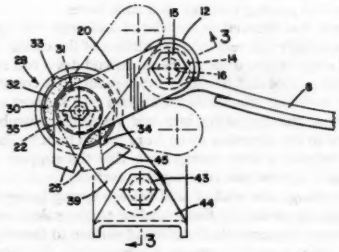
1. A hydraulic damper for damping the relative movement between the sprung and unsprung masses of an automobile comprising a pressure cylinder to store damping fluid, an axially displaceable piston rod extending in a sealed manner into the cylinder, a damping piston reciprocably fitted to said piston rod and dividing the cylinder into a first and second chamber, a spoiler member connected to said piston for reciprocable movement relative to said piston rod, bias means for resisting axial movement of said piston relative to said rod, valve means associated with said piston for restrictively allowing damping fluid to flow between said chambers when said piston rod reciprocates within said cylinder, alternating voltage generator means external to said cylinder for energizing an electrical coil coaxial to the rod and generating a magnetic field about said spoiler, current sensing means remote to said piston for detecting movement of said spoiler relative to said magnetic field and operable to generate an electrical current signal in response to said movement, and electrically controllable flow means for regulating flow of damping fluid between said upper and lower chambers in response to said electrical control signal.

5,007,660

SUSPENSION SYSTEM

Roy L. Orndorff, Jr., Kent, and Mark J. Bono, Munroe Falls, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 297,642, Jan. 17, 1989, abandoned. This application Aug. 17, 1989, Ser. No. 394,904
Int. Cl.[5] B60G *11/38*
U.S. Cl. 280—715 **14 Claims**



1. A motor vehicle suspension system having a frame, a wheel support member, a leaf spring secured to said wheel support member, first means pivotally connecting one end of said leaf spring to said frame, second means connecting the other end of said leaf spring to said frame, said second means comprising a torsion spring member, said torsion spring member having a central shaft, a lever member pivotally interconnecting said other end of said leaf spring to said central shaft, an annular elastomeric member having an inner bore with an inner annular surface, said annular elastomeric member having an outer annular surface, said inner annular surface secured to said shaft, an outer housing member secured to said outer annular surface of said elastomeric member, said outer housing member pivotally connected to said frame, and said outer housing member having a stop member, and said lever member having an abutment movable into engagement with said stop member upon rotation of said central shaft to thereby make said leaf spring as the sole suspension means.

5,007,661

SAFETY APPARATUS

Reiner Lenzen, Almont, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed May 16, 1989, Ser. No. 352,758
Int. Cl.[5] B60R *21/32*
U.S. Cl. 280—735 **14 Claims**

1. An apparatus comprising:

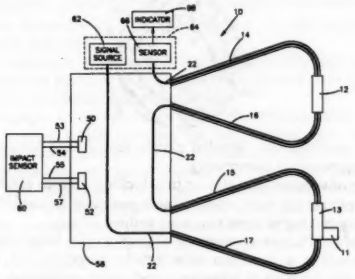
an actuatable safety device for protecting an occupant of a vehicle;

at least a pair of ignitable pyrotechnic transmission lines, one end of each pyrotechnic transmission line being connected to said safety device, ignition of either pyrotechnic transmission line effecting actuation of said safety device;

signal means for providing a signal;

conduit means coupled at one end to said signal means for

receiving said signal from said signal means and extending through one pyrotechnic transmission line, through at least a portion of the actuatable safety device, and through the other pyrotechnic transmission line, said conduit means conducting said signal received from said signal means;



sensor means coupled to the other end of said conduit means for sensing receipt of said signal conducted through said conduit means; and

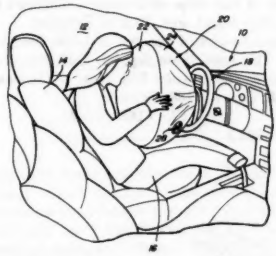
indicator means responsive to said sensor means for indicating a change in said signal conducted through said conduit means.

5,007,662

AIR BAG RELIEF VALVE

William M. Abramczyk, Rochester Hills; Edward I. Hull, West Bloomfield, and James R. Feustel, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 16, 1989, Ser. No. 421,882
Int. Cl.[5] B60R *21/28*
U.S. Cl. 280—739 **10 Claims**



1. An improved air bag for an automotive inflatable occupant restraint system of the type having a source of inflating gas connected to the air bag for pressurization thereof, the air bag comprising:

a flexible body portion having an internal chamber in fluid communication with the inflating gas source;

a discharge port formed through said body portion for directing said gas out of said chamber to the atmosphere; and

a valve comprising:

an annular base portion fixedly secured to said body portion;

a centrally located support portion positioned within said base portion;

a plurality of apertures formed through said support portion in circumferentially spaced relationship; and

a plurality of flap members hingedly connected to said support portion for movement between a position enclosing said discharge port and positions opening said discharge port in response to the pressurization of said chamber.

5,007,663

APPARATUS FOR PRODUCING ADDRESS LABELS

John Moran, P.O. Box 10458, Marina Del Rey, Calif. 90295

Filed Aug. 14, 1989, Ser. No. 393,968
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—81 **3 Claims**

1. A multiple ply label assembly suitable for producing a separate label in the course of printing a document sheet, said label assembly comprising

a label ply having upper and lower surfaces;

said base ply lower surface having low tack adhesive means applied thereto for removably bonding said base ply to the surface of the document sheet so that said base ply can be readily peeled from the sheet without damaging or leaving discernible residue on the sheet;

said base ply upper surface having a layer of release material applied thereto;

a label ply having upper nd lower surfaces;

said label ply lower surface having high tack adhesive means applied thereto suitable for nonremovably bonding said label ply to a surface of an end use sheet so that said label ply cannot readily be peeled from the end use sheet without damaging or leaving discernible residue on the sheet;

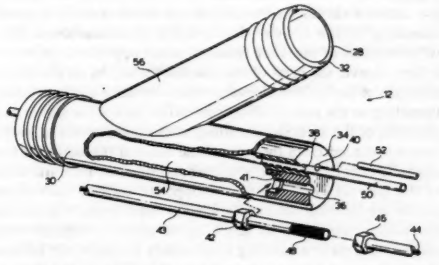
said label ply being superimposed on said base ply with said label ply adhesive means contacting said layer of release material to enable said label ply to be readily peeled from said base ply and be nonremovably bonded to the end use sheet surface.

5,007,664

JOINT IN FUME-EXTRACTING WELDING GUN

Robert N. Mann, Mississauga, Canada, assignor to Mig Vac Inc., Mississauga, Canada

Filed Oct. 17, 1989, Ser. No. 422,760
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—330 **3 Claims**



1. A joint suitable for joining services to a welding gun, comprising:

two semi-circulary contoured pre-molded polymeric material elements each having curvilinear extremities of complimentary shape to the other to permit said elements to be snap-locked together along a longitudinal line of join of said elements one to another at said curvilinear extremities,

said joint having an elongate cylindrical first hollow body member and an elongate cylindrical second hollow body member extending at an angle to and merging with said first hollow body member so as to provide fluid-flow communication therebetween,

said first hollow body member being closed at one end by a cylindrical end closure integrally formed with one of said two pre-molded elements,

said end closure having a first bore therethrough with a keyed recess at an end thereof interior of said first hollow body member and further bores therethrough.

5,007,665

COUPLING FOR WELL CASINGS

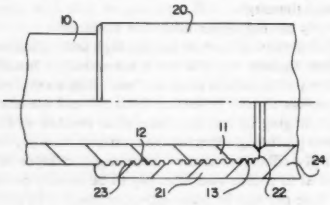
Cipriano Bovisio, Via Borsa 12, 20100 Milano; Carlo Foglieni, Via San Bernardino, 95, 24100 Bergamo; Fulgenzio Fumagalli, Via Treviglio, 44, Fara D'Adda (Bergamo); Norberto Morlotti, Via Degli Albani, 17, 24100 Bergamo, and Mario Palladini, Via Trieste, 32, 24044 Dalmine (Bergamo), all of Italy

Filed Dec. 21, 1987, Ser. No. 136,599

Claims priority, application Italy, Dec. 23, 1986, 48786 A86

Int. Cl.[5] F16L *15/00*

U.S. Cl. 285—334 3 Claims



1. A casing joint comprising a pair of tubes and a hollow sleeve, each of said pair of tubes having at least one externally threaded end and said hollow sleeve having internally threaded opposite ends adapted to receive the externally threaded ends of the pair of tubes, wherein the internal threading on each of the opposite ends of the hollow sleeve terminates in an abutment extending radially inwardly and axially toward its respective end of the hollow sleeve to define a frustoconical surface, each externally threaded end of the pair of tubes having a complementarily shaped end surface for engagement with said abutment surfaces of the hollow sleeve, the external threading on the pair of tubes and the internal threading of the hollow sleeve being so dimensioned that, when the pair of tubes are received in the opposite ends of the hollow sleeve, the crest of the internal threading on the opposite ends of the hollow sleeve contacts the root of the external threading on the pair of tubes received in the hollow sleeve and the crest of the external threading of the tubes received in the sleeve is spaced from the root of the internal threading on the opposite ends of the hollow sleeve; and wherein forward faces of the internal threading on the opposite ends of the hollow sleeve are inclined outwardly toward their respective end of the hollow sleeve by an angle up to about 3 degrees with respect to a plane extending transversely through said hollow sleeve, forward faces of the external threading on the ends of the pair of tubes are inclined outwardly towards their respective end of the tube by an angle of up to about 3 degrees with respect to a plane extending transversely through the tube, back faces of the internal threading on the opposite ends of the hollow sleeve are inclined outwardly away from their respective end of the hollow sleeve by an angle from about 23 to about 28 degrees relative to a plane extending transversely through said hollow sleeve, and back faces of the external threading on the ends of the pair of tubes extends outwardly away from the corresponding ends of the tubes at an angle of about 23 to about 28 degrees with respect to a plane extending transversely through the said tubes.

5,007,666

TONGUE AND GROOVE SNAP-FIT PIPE COUPLING

Vincent Kyfes, Mesa, Ariz., assignor to C & L Development Inc. and Chill Tech, Inc., both of Mesa, Ariz., part interest to each

Filed Jan. 19, 1990, Ser. No. 467,190

Int. Cl.[5] F16L *47/06*

U.S. Cl. 285—373 3 Claims

1. A longitudinally divided plastic pipe fitting for encompassing conduits comprising:

a pair of substantially similar interlocking plastics segments, each of said segments comprising a generally arcuate shaped body having at least two longitudinal edges,

one of said edges comprising a tongue split longitudinally thereof in a direction substantially perpendicular to its length into two interconnected parts separated by a triangular slot, said slot being widest along the outside surface of said tongue, and further narrowing as it progresses to the interior of said tongue,

the other of said edges comprises a groove conforming to and receiving the tongue formed on the juxtapositioned edge of the other of said segments,

said tongue when forced into the opening in said groove in the other of said segments causing its two parts to engage each other along the length of its slot and when fully in the groove opening under memory of the plastic of said parts to form again said triangular slot causing the tongue to interlock with the periphery of said groove thereby interlocking the segments together.

5,007,667

CRIMPED SLEEVE TO TUBE JOINT

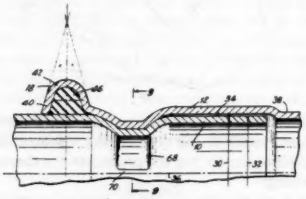
Heinz Unewisse, Muehlheim/Ruhr, and Herbert Foering, Solingen, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Dusseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 285,498, Dec. 16, 1988, abandoned. This application Sep. 18, 1989, Ser. No. 408,768

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1988, 3833748; Oct. 6, 1988, 3834353

Int. Cl.[5] F16L *13/14*

U.S. Cl. 285—382.2 36 Claims



1. A crimped sleeve to the tube joint, including:

a tube of circular transverse cross-section;

a sleeve of circular transverse cross-section telescoped over said tube;

a seal ring containing flange at one end of said sleeve;

a seal ring contained within said seal ring containing flange;

said seal ring containing flange having been compressively reduced into engagement with the outer circumference of said tube, and said sleeve and said tube having been crimped at a location spaced from said one end to immobilize said sleeve against axial and circumferential movement relative to said tube, further including:

at least two crimps extending inwardly of the outer periphery of said respective sleeve and tube, and each extending

arcuately of the circumference of said respective sleeve and tube on a constant radius of said respective sleeve and tube taken from the longitudinal axis of said sleeve and tube, said respective crimps being separated from each other circumferentially of said sleeve and tube by struts provided by axially extending portions of said sleeve and tube extending axially along the original radius of said respective sleeve and tube at the radially outermost porcave inwardly of the outer surface of said respective sleeve and tube;

said respective crimps each including radially outwardly divergent portions at the respective opposite ends of said circumferentially extending crimps;

said crimps, when viewed in transverse cross-section taken in a plane which includes the longitudinal axis of said respective sleeve and tube, extending symmetrically to opposite sides of a plane transverse to the longitudinal axis of said respective sleeve and tube, and each including radially inwardly convergent side faces providing transitions between the outer circumference of said respective sleeve and tube and a radially inner portion of said respective crimps;

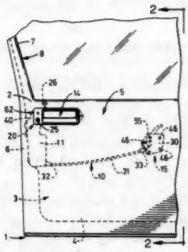
said respective inwardly convergent side faces each extending on the surface of an imaginary cone having its perpendicular axis coincident with the longitudinal axis of said respective sleeve and tube.

5,007,668

INTEGRATED CONTROL DEVICE FOR A VEHICLE DOOR AND DOOR FITTED WITH THIS DEVICE

Nevio Di Giusto, Venaria, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Jun. 1, 1990, Ser. No. 531,573
Int. Cl.[5] E05C *3/26*
U.S. Cl. 292—216 **6 Claims**



1. An integrated control device for a vehicle door, of the type comprising a lock equipped with an engaging fork, an outer handle and an inner handle that activate the lock, characterized in that said outer handle and said lock are held connected to each other by an L-shaped bracket, which supports said outer handle on a first wing and said lock on a second wing, projecting laterally from the first wing and supporting on its opposite side with respect to the first wing, said engaging fork; said inner handle being held fixed and idle by a second supporting bracket and being connected to said lock by a flexible cable whose ends are securely fixed to said supporting brackets, said brackets being equipped with means of fixing to said door.

5,007,669

LEVERAGED SECURITY DOOR LOCK

Kevin L. Pomerleau, 8621 Montezuma, #311, San Diego, Calif. 92115

Filed May 9, 1990, Ser. No. 520,744
Int. Cl.[5] E05C *17/12*
U.S. Cl. 292—262 **10 Claims**

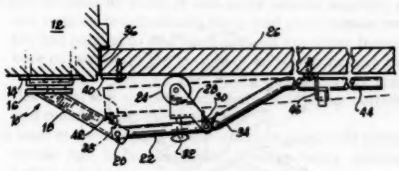
1. A leveraged security lock for a door system comprising a door frame having a door mounted in said frame and having a hinged edge and an opening edge, said lock having:

(a) a rigid leverage bar having a pivoted end and a distal end;

(b) a bar mount mounted to said frame and pivotally mounting said bar such that same may be alternatively swung clear of said door in an open mode, or across the opening of said door, to obstruct the opening of said door in a closed mode;

(c) latch means mounted to said door system to latch said bar in said closed mode to prevent the opening of said door; and,

(d) said bar having a rolling bearing between the pivoted end



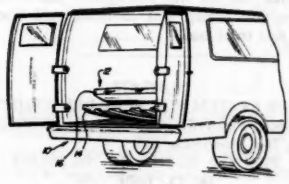
and the distal end thereof for bearing against said door, such that the pressure applied to the distal end of said bar forcing same toward the closed mode yields the user a mechanical advantage.

5,007,670

REMOVABLE AND ADJUSTABLE FITTABLE VEHICLE BED LINER ASSEMBLY

Ronald D. Wise, 1305 Riverside Rd., Old Hickory, Tenn. 37138

Filed Oct. 31, 1989, Ser. No. 429,386
Int. Cl.[5] B62D *33/00*
U.S. Cl. 296—39.1 **20 Claims**



1. A liner assembly for lining the bed portion of a pickup truck, a van and the like, said assembly comprising:

a liner having multiple layers;

one of said multiple layers is a base layer;

said base layer having a top side and a bottom side;

said base layer further having a width and a length;

another of said multiple layers is a resiliently yieldable layer fixed to said top side of said base layer;

said resiliently yieldable layer having a width and a length equivalent to that of said base layer;

said resiliently yieldable layer further having a top side and a bottom side;

means for adjusting said length and said width of said base layer and said resiliently yieldable layer; and

a plurality of pairs of detachably interattachable portions, comprised of a hooked portion attached to said bottom side of said base layer and a looped portion attached to said bed portion.

5,007,671

UNDER THE RAIL LINER WITH TABS

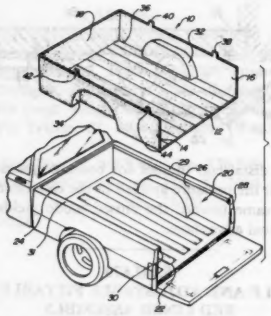
John C. Oprea, Caro, Mich., assignor to Durakon Industries, Inc., Lapeer, Mich.

Filed Dec. 22, 1989, Ser. No. 455,681
Int. Cl.[5] B60R *13/01*
U.S. Cl. 296—39.2 **4 Claims**

1. A protective liner for a truck bed, said bed having a floor, a front wall and two opposing side walls, each side wall having a lipped end portion, comprising:

a liner member adapted to be received into said truck bed,

said liner member having a bottom, a front wall and two opposing side walls, said opposing liner side walls respectively associated with said truck bed side walls, said liner side walls each having a first and second end, said first end of each liner side wall connected to said liner bottom and said second end of each liner side wall having a resilient portion, wherein the vertical height of said resilient portion and liner side wall is greater than the vertical height



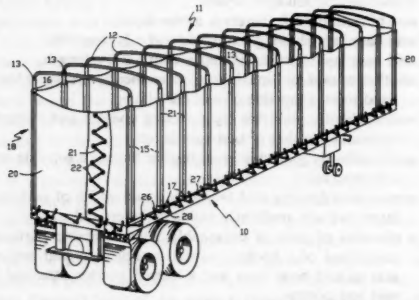
of said truck bed side wall and wherein said resilient portion is deformed and retained in its deformed position within said lipped end of said truck bed side walls, said resilient portion of each said liner side wall urging its associated liner side wall against its respectively associated truck bed side wall and against said truck bed floor wherein said urging acts to retain said liner member within said truck bed.

5,007,672

COVER SYSTEM FOR FLAT BED VEHICLES

Ralph E. Koch, Poseyville, Ind., assignor to Ralph E. Koch Trucking, Inc., Poseyville, Ind.

Filed Aug. 16, 1990, Ser. No. 568,413
Int. Cl.[5] B60P *7/04*
U.S. Cl. 296—100 **11 Claims**



1. A cover system for covering a load on a vehicle having a flat bed and a plurality of side post brackets, comprising:

a plurality of longitudinally arranged inverted U-shaped bows having a bow shaped section extending transversely across the flat bed and a pair of downwardly extending legs;

a plurality of side posts each having a lower end adapted to be received in one of the side post brackets and an upper end defining a socket adapted to receive therein one of said pair of downwardly extending legs of said U-shaped bows;

a top cover formed of a flexible, sheet-like tarpaulin material supported by said plurality of U-shaped bows and sized to extend over the top of a load carried on the flat bed of the vehicle; and

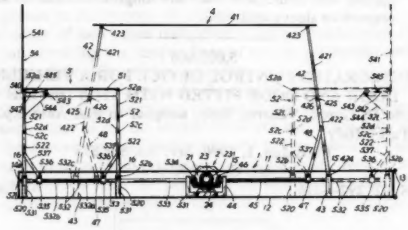
a side cover means including a plurality of side cover sections formed of a flexible, sheet-like tarpaulin material, said side cover sections formed separate from each other and from said top cover and each having a plurality of pockets sized to receive therein said side posts, each pocket having a portion thereof which is arranged to overlie said upper end of a corresponding one of said side posts and defining an opening through which is adapted to be received a corresponding one of said pair of downwardly extending legs of said U-shaped bows, said side cover sections extending from the top ends of said posts to the flat bed of the vehicle.

5,007,673

COLLAPSIBLE TABLE AND CHAIR SET

Yen-Feng Cheng, 5F, No. 64, Chien-Kang St., Shih-Lin District, Taipei City, Taiwan

Filed Aug. 13, 1990, Ser. No. 567,118
Int. Cl.[5] A47B *39/00*
U.S. Cl. 297—159 **6 Claims**



1. A collapsible table and chair set comprising:

a base platform;

a driving means including a driving motor operatively rotatable forwardly or reversely, a main transmission shaft coupled to an inner shaft of the driving motor, a master bevel gear rotatably mounted in a central portion of said base platform driven by said main transmission shaft driven by said driving motor;

an erection and lay-down means including a reel operatively coupled to and driven by an outer shaft of said driving motor, a wire rope having an inner end portion wound on said reel and an outer end portion formed as a loop adapted to be hung on a hook fixed on a wall;

a table including a table plate and a plurality of linkages pivotally secured under the table plate and secured on said platform, a plurality of table worms radially rotatably mounted on said platform and operatively driven by said master bevel gear and said driving motor, and a plurality of table sleeves each having worm gear engageable with each said table worm and having a supporting link pivotally secured between said sleeve and said linkage for operatively raising said linkage for extending the table, or lowering said linkage for folding the table;

a plurality of chairs radially disposed around said table each said chair including a pair of seat bars pivotally connected with a plurality of linking legs pivotally secured to said platform, a two-way chair worm radially and rotatably mounted on the platform and operatively engageable with and driven by said master bevel gear and said driving motor, each said two-way worm having a rightwardly-threaded worm portion engageable with a chair sleeve secured with a transverse rod which is pivotably connected with two inner chair supporting links pivotally connected to a pair of inner linking legs formed on an inner portion of the chair, and a leftwardly-threaded worm portion engageable with another chair sleeve secured with another transverse rod which is pivotally

connected with two outer chair supporting links pivotally connected to a pair of outer linking legs formed on an outer portion of the chair; and

a control means having a first selector switch for operatively extending or retracting a table and chair set, and a second selector switch for operatively erecting a folded table and chair set or laying down the table and chair set, whereby upon a forward rotation of said driving motor and said master bevel gear, said worms will be forwardly rotated to radially move said sleeves for raising said linkages and linking legs for upwardly extending the table and chairs;

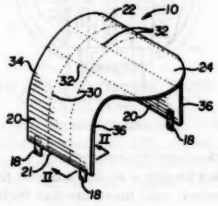
and whereby upon a rotation of the reel, the wire rope can be receivably wound on the reel from a lower end portion of the wire rope to erect a folded table and chair set when an upper end portion of the wire rope is hanged on a wall and the table and chair set is folded.

5,007,674

INFANT SHADE APPARATUS

John Franc, 129 Schley Ave., Pittsburgh, County of Allegheny, Pa. 15205

Filed Jun. 15, 1987, Ser. No. 61,476
Int. Cl.[5] A47C 7/62
U.S. Cl. 297—184 **12 Claims**



1. A sun shade for use in conjunction with an infant carrier such as a car seat to shield an infant from the elements comprising:

an expanse of resiliently flexible sheet-form foam rubber;

an envelope of sheet-form material substantially completely covering said expanse of foam rubber;

plural elongated attachment means extending along juxtaposed surface portions of said expanse of foam rubber and said envelope to secure said envelope and said foam rubber together at least at intervals along the extent of each said attachment means;

said elongated attachment means being cooperable with said expanse of foam rubber and said envelope to permit said shade to be formed as a self-supporting arched structure having a pair of spaced apart base portions and a continuously arched body extending over the space between said base portions; and

selectively releasable means affixed to said shade adjacent said base portions for co-action with such a carrier to retain said shade with respect to such a carrier as such a self-supporting arched structure.

5,007,675

FORE-AND-AFT ADJUSTER FOR BICYCLE SEAT

Mario S. Musto, 60 Roan Pl., Woodside, and Scott W. Davis, 314 Palomar Dr., Redwood City, both of Calif. 94062

Continuation-in-part of Ser. No. 379,597, Jul. 14, 1989, abandoned. This application Apr. 10, 1990, Ser. No. 507,000
Int. Cl.[5] B62J 1/00
U.S. Cl. 297—195 **22 Claims**

1. A bicycle seat adjuster for a bicycle which is arranged to move in a predetermined forward motion direction and which has a frame and an elongated seat post having upper end and lower ends, said lower end being attached to and supported by said frame, said seat adjuster comprising:

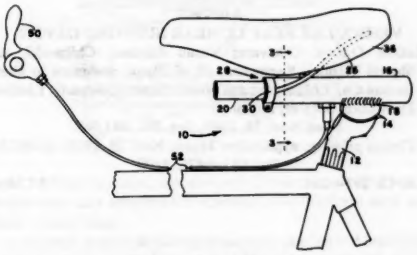
an outer tubular member having an extended length and a uniform bore along its length, said outer tubular member having a lower surface and an upper surface opposite to said lower surface,

mounting means for mounting said outer tubular member on said upper end of said seat post such that said uniform bore is aligned generally with said predetermined forward motion direction and said lower surfaces said upper end of said elongated seat post,

a slot of uniform width in said outer tubular member, said slot running longitudinally along said outer tubular member and parallel to said bore, said slot extending from said bore outwardly to the outside of said outer tubular member, said slot defining two facing and uniformly spaced slot walls, said slot being formed in said upper surface of said outer tubular member,

an inner member having an outer surface sized to fit slidingly within said bore, said inner member being positioned within said bore,

a slidable seat support member having two opposing faces spaced apart so as to fit slidingly within said two facing and uniformly spaced slot walls, said support member having lower and upper ends,



attachment means for attaching said lower end of said seat support member to said inner member so that said seat support member extends generally normal to said inner member and so that said inner member and said seat support member are united for common sliding motion within a given range of adjustment with respect to said outer member, said seat support member extending through said slot in said upper surface of said outer tubular member and protruding upwardly from said upper surface of said outer tubular member,

seat fastening means for fastening a bicycle seat to said upper end of said seat support member,

locking means for locking said inner member to said outer member in a plurality of positions within said given range of adjustment, and

urging means for continuously urging said seat support member in a given direction with respect to said outer tubular member, said given direction paralleling said predetermined forward motion direction,

whereby a seat attached to said seat support member can be slidingly adjusted fore and aft with respect to said frame of said bicycle, yet will be prevented from side movement in with a simple, reliable mechanism.

5,007,676

QUICK DETACHABLE VEHICLE SEAT COVER

Jack Lien, No. 30, Yen Chi Street, Kaohsiung, Taiwan

Filed Oct. 12, 1989, Ser. No. 420,404
Int. Cl.[5] A47K 27/00
U.S. Cl. 297—218 **7 Claims**

1. A rapidly detachable vehicle seat cover including:

a cover cloth having a size corresponding to a vehicle seat and first fastening strips attached at its side edges;

a plurality of fastening elements detachably secured to said vehicle seat and connecting said cover thereto; said fasten-

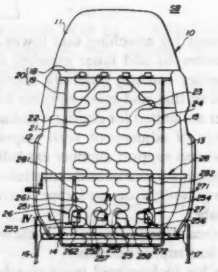
ing elements each including a belt-like flexible rubber pad having several grooves for receiving respective clips, and second fastening strips covering said flexible rubber pad and tightly sealed thereto by a high frequency heat welding process; said clips respectively having a fixed half secured between said flexible rubber pad and said second fastening strip and a free half suspended from said flexible rubber pad.

5,007,677

VEHICULAR SEAT LUMBAR SUPPORT DEVICE

Makoto Ozawa, Odaware; Yasuo Hirama, Chigasaki, and Shyuzi Mizuno, Kanagawa, all of Japan, assignors to Ikeda Bussan Co., Ltd., Ayase and Nissan Shatai Company, Limited, Hiratsuka, both of, Japan

Filed Nov. 24, 1989, Ser. No. 441,043
Claims priority, application Japan, Nov. 29, 1988, 63-301294
Int. Cl.[5] A47C *3/00*
U.S. Cl. 297—284 **8 Claims**



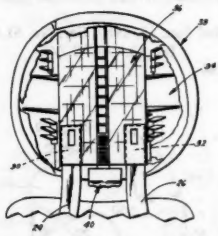
1. A vehicular seat back lumbar support device comprising:
a seat back frame, said seat back frame including opposite side panels;
a plurality of vertical main springs, said plurality of vertical main springs being mounted on said seat back frame for resiliently supporting a seat back surface, said seat back frame constituting a structural base of a seat back;
a supporting member, said supporting member laterally extending between said opposite side panels of said seat back frame and being pivotally supported thereby;
a pair of arm members, said arm members being secured to said supporting member
a pair of support brackets, said support brackets being pivotally connected to said arm members through pivot portions;
a lateral spring, said lateral spring positioned at a portion of the seat back surface whereby a lumbar portion of a seat occupant is supported, said lateral spring being equipped with fixing portions which are fixed to said vertical main springs, said lateral spring having both resilient end portions bent rearward and said resilient end portions being supported by said support brackets; and
moving means, said moving means being arranged between said seat back frame and said supporting member for rotating said supporting member;
wherein, said moving means allows said pivot portion of said support bracket, by rotating said supporting member, to move from a normal position to a lumbar support position which is located forward of said normal position, so that said support brackets resiliently forwardly bias said lateral spring and said plurality of main vertical springs so as to provide a smoothly distributed degree of support across said lumbar portion of said seat occupant.

5,007,678

CHAIR BACK HEIGHT ADJUSTMENT MECHANISM

Larry DeKraker, Holland, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Oct. 11, 1989, Ser. No. 419,097
Int. Cl.[5] A47C *1/00*
U.S. Cl. 297—353 **19 Claims**



1. A chair back assembly, comprising:
an inner bracket having a socket adapted to receive a back support member, said inner bracket including a locking detent configured to engage the back support member and lock the inner bracket to said member;
an inner shell having a surface facing said bracket, said inner shell configured to define a chair back member;
slide means on said inner shell and said bracket for slideably mounting said inner shell for vertical adjustment relative to said bracket, said slide means including a slide and a cooperating guide, each on one of said inner shell and bracket;
adjustment means on said bracket and shell for releasably latching said shell to said bracket to permit thereby selective vertical positioning of said shell with respect to said bracket in a single handed fashion, and
an outer shell secured to said inner shell, said outer shell dimensional and configured to enclose said inner bracket.

5,007,679

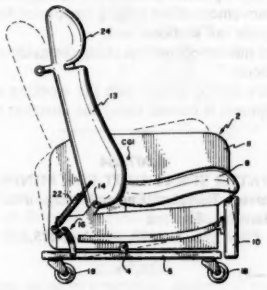
RECLINING CHAIR

Ned W. Mizelle, P.O. Box 5985, High Point, N.C. 27285

Filed Jun. 12, 1989, Ser. No. 364,377
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—374 **13 Claims**

1. A reclining chair, comprising,
a base member,
a chair assembly including a seat and a back, said back being tiltable relative to the seat from a generally upright sitting position to a generally horizontal reclining position,
a pivot means connecting the chair assembly to the base member for pivotal movement about a pivot axis that is fixed relative to the base member and the chair assembly,
said chair assembly being rearwardly tiltable on the pivot means for movement from a first position to a second position,
releasable locking means for holding the chair assembly at a fixed inclination angle relative to said base member,
said chair assembly, when the back is in said reclining posi-

tion and the chair assembly is in its first position with an occupant seated thereon, having a center of gravity that is forward of the pivot axis so that the weight of the chair assembly moves it toward said first position; and,



said center of gravity, when the back is in said reclining position and the chair assembly is in its second position, being behind the pivot axis so that the weight of the chair assembly moves it toward said second position, whereby the chair will be stable in both of said first and second positions.

5,007,680

VEHICULAR SEAT WITH SEATBACK INCLINING MECHANISM

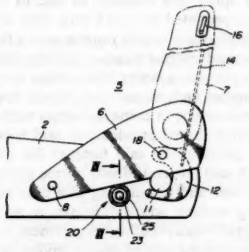
Fumio Miyauchi, and Shyuzi Mizuno, both of Kanagawa, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Oct. 5, 1989, Ser. No. 417,491

Claims priority, application Japan, Oct. 28, 1988, 63-40572[U]

Int. Cl.[5] B60N 2/02

U.S. Cl. 297—379 **7 Claims**



1. A vehicular seat comprising:

a seat cushion;

a seatback;

a base plate having one end pivotally connected to said seat cushion through a pivot pin;

a reclining device mounted on said base plate, said reclining device having a pivotal arm secured to said seatback;

a striker secured to said seat cushion;

a latch member pivotally connected to said base plate, said latch member being latchingly engageable with said striker;

cancelling means for cancelling the latching engagement between said latch member and said striker; and

a stopper structure secured to said seat cushion at a position between said striker and said pivot pin of said base plate, said stopper structure being positioned away from said striker by a given distance, said stopper structure having thereon an elastomeric member against which a lower edge portion of said base plate is pressed when said latch member is brought into a latching engagement with said striker.

5,007,681

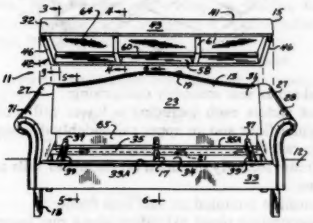
FLUID-RESISTANT, UPHOLSTERED FURNITURE SEAT ADAPTED TO AID HOUSEKEEPING

Louis M. Meier, Dubuque, Iowa, and Lloyd G. Berning, Hazel Green, Wis., assignors to Flexsteel Industries, Inc., Dubuque, Iowa

Filed Sep. 8, 1989, Ser. No. 404,870

Int. Cl.[5] A47C 7/00

U.S. Cl. 297—440 **14 Claims**



1. A fluid resistant, upholstered furniture seat for use in health care and adapted for standing on a platform such as a floor, comprising:

a backrest portion defining an in-back side, an out-back side, a top edge and a bottom edge, said in-back side being substantially vertically oriented;

said backrest portion including a backrest frame member and a fluid-resistant upholstery cover covering said in-back-side;

a removable seat portion defining a substantially flat top surface and a bottom side;

said removable seat portion including a seat portion frame member associated with said bottom side, a monolithic fluid barrier upholstery cover covering said substantially flat top surface, a seat cushion disposed between said monolithic fluid barrier upholstery cover and said seat portion frame member;

a seat portion support frame member affixed to said backrest frame member for providing support for, without being coupled to, said removable seat portion so that said substantially flat top surface is substantially horizontally oriented and extends outwardly from said backrest member, adjacent said in-back side and said bottom edge;

structural means including bearing stop means disposed on either the lower portion of said seat portion frame member or on the upper portion of said seat portion support frame member for preventing forward or aft displacement of said seat portion frame member on said support frame while allowing said seat portion frame member to be lifted vertically in removing said seat portion frame member from said support frame member;

said removable seat portion covering said support frame and said opening formed in said support frame, with said substantially flat top surface of said removable seat portion inclining in decreasing elevation towards said backrest member when said removable seat portion is carried on said seat portion support frame; and

a plurality of feet adapted for supporting said back-rest member and said seat support frame above said platform.

5,007,682

VEHICULAR SEAT ASSEMBLY

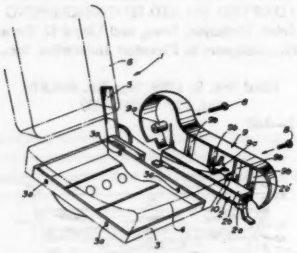
Isao Kuwabara; Yoshio Watanabe; Susumu Yoshimura, and Hidekazu Maruyama, all of Kanagawa, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Apr. 7, 1989, Ser. No. 334,444

Claims priority, application Japan, Sep. 22, 1988, 63-124195[U]

Int. Cl.[5] B60N *1/00*

U.S. Cl. 297—452 8 Claims



1. A vehicular seat assembly comprising:

two seat sliders each including a lower rail secured to a vehicular floor and an upper rail slidably disposed on said lower rail;

a seat frame securely mounted on the upper rails of the seat sliders;

a seat cushion mounted on said seat frame;

a side decorative panel extending along one lateral side of said seat frame for concealing unsightly portions;

at least two studs integrally formed on said side decorative panel, said studs being secured to the lateral side of said seat frame; and

a projection integrally formed on said side decorative panel and having a free unattached end which is seated on the upper rail of one of said seat sliders.

5,007,683

METHOD AND EQUIPMENT FOR NARROW ORE MINING

Roland Granskog, Skelleftea, Sweden, assignor to ALIMAK AB, Sweden

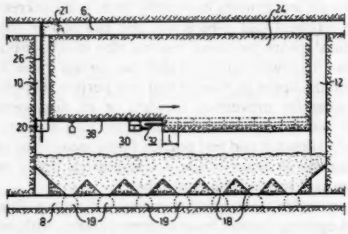
PCT No. PCT/SE88/00023, § 371 Date Aug. 14, 1989, § 102(e) Date Aug. 14, 1989, PCT Pub. No. WO88/06225, PCT Pub. Date Aug. 25, 1988

PCT Filed Jan. 22, 1988, Ser. No. 382,705

Claims priority, application Sweden, Feb. 19, 1987, 8700687

Int. Cl.[5] E21C *35/16, 41/00;* B66B *17/04*

U.S. Cl. 299—10 14 Claims



1. A method for mining a narrow ore body in a mine having a mining chamber comprising the steps of:

forming a raise which substantially follows the narrow ore body and is in communication with the chamber;

providing a lift cage movable along the raise, the cage including a guide and mining equipment movably attached to the guide from which mining operations within the chamber can be carried out;

suspending a plurality of guide rail sections from a roof of the chamber so that the guide of the cage can be aligned with the guide rail sections suspended from the chamber roof by appropriately positioning the cage in the raise to permit movement of the mining equipment from the guide to the guide rail sections; and

moving the mining equipment along the guide and the guide rail sections;

whereby ore can be mined with the working equipment as the equipment is moved along the chamber roof.

5,007,684

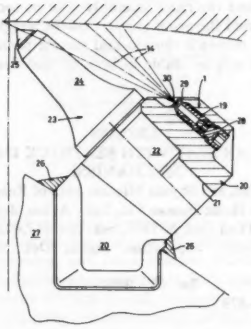
WATER SPRAY UNIT FOR MINING

George A. Parrott, Barnsley, England, assignor to Minnovation Limited, Barnsley, England

Filed Feb. 5, 1990, Ser. No. 475,335

Int. Cl.[5] E21C *35/22*

U.S. Cl. 299—81 16 Claims



1. A water spray unit adapted, in use, to be located in a receiving bore provided in a pick box, said water spray unit comprising an elongate nozzle portion and a fastener for said nozzle portion, and internal water-receiving chamber provided in said nozzle portion, a water inlet orifice in communication with said chamber and, at one end of said nozzle portion, a water discharge orifice in communication with said chamber, an external screw thread provided on said fastener and drive surfaces also provided on said fastener for screwing or unscrewing, with said one end of said nozzle portion being distal from said fastener and terminating in a nose having a frusto-conical sealing surface, adapted, in use, to be forced by said fastener, in tight, water-sealing engagement with a complementary frusto-conical seat of said receiving bore.

5,007,685

TRENCHING TOOL ASSEMBLY WITH DUAL INDEXING CAPABILITY

Wayne H. Beach, Roaring Spring, and Steven D. Shirk, Altoona, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Jan. 17, 1989, Ser. No. 297,909

Int. Cl.[5] E21C *35/18*

U.S. Cl. 299—91 23 Claims

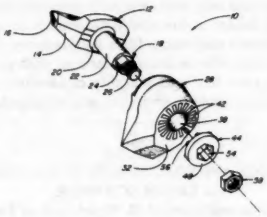
1. A trenching tool assembly with an indexable cutter bit shank comprising:

a) a carrier block formed with a bore extending through the carrier block and an indexing surface having a plurality of serrations;

b) a cutter bit having a shank adapted to extend through the bore in the carrier block; and

c) at least one indexing means for orienting the shank of the cutter bit within the bore of the carrier block in a

plurality of different radial settings, the indexing means including a plurality of serrations engageable with the



serrations in the indexing surface of the carrier block at any one of different angular positions.

5,007,686

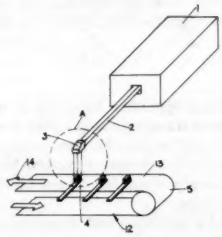
PROCESS FOR ROUNDING BRISTLE TIPS ON BRUSHES

Rolf M. Klein; Reinhart Poprawe, both of Aachen, and Gerd W. Herziger, Roetgen-Rott, all of Fed. Rep. of Germany, assignors to Blendax GmbH, Fed. Rep. of Germany

Filed Oct. 31, 1989, Ser. No. 429,740

Int. Cl.[5] A46D *1/04*

U.S. Cl. 300—21 **12 Claims**



1. A process for rounding off the tips of bristles used in brushes and made of thermoplastic material said process comprising subjecting said tips of said bristles to a pulsed laser beam operating in the kilowatt range and having a pulse duration in the microsecond range.

5,007,687

ANTI-SKID-CONTROLLED HYDRAULIC BRAKE SYSTEM

Dieter Kircher, Dortelweil, and Paul Schwarzer, Hofheim, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

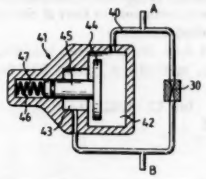
Division of Ser. No. 287,307, Dec. 20, 1988, Pat. No. 4,919,495. This application Jan. 12, 1990, Ser. No. 464,097

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1987, 3744070

Int. Cl.[5] B60T *11/10*

U.S. Cl. 303—113 **5 Claims**

1. An anti-skid controlled hydraulic brake system including a master cylinder, a pressure medium storage reservoir, at least one hydraulically controlled wheel brake connected to said master cylinder via a brake line and to said reservoir via a relief line, pressure modulation means in each of said brake and relief lines for modulating the pressure applied to said brake in response to pressure control signals, a pump having an intake connected to said reservoir and an outlet connected via pressure line means to said brake line at a first location, and throttling valve means for throttling flow between said pump and said master cylinder, a first check valve connected to said brake line in parallel with said throttling valve means accommodating flow from said master cylinder toward said wheel brake, and a second check valve connected to said brake line in



parallel with said throttling valve means accommodating flow only from said wheel brake toward said master cylinder.

5,007,688

MOBILE INTENSIVE CARE UNIT

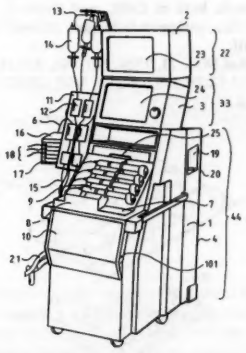
Jörg Bayerlein; Eric Hecker; Peter Hoeck, all of Stockelsdorf, Fed. Rep. of Germany, and Francesco Milani, Giubiasco, Switzerland, assignors to Drägerwerk Aktiengsellschaft, Lübeck, Fed. Rep. of Germany

Filed Apr. 13, 1989, Ser. No. 337,669

Claims priority, application Fed. Rep. of Germany, May 5, 1988, 3815273

Int. Cl.[5] A47B *81/00*

U.S. Cl. 312—7.2 **11 Claims**



1. A mobile intensive care unit for the reception of devices and instruments, comprising: a lower section mounted on roller means for movement of the unit, said lower section defining a compartment and including an upper surface defining a horizontal depositing surface; an intermediate section arranged above said lower section, said intermediate section defining an inclined surface extending from said depositing surface upwardly and rearwardly, said inclined surface including liquid dosing unit receiving elements for receiving liquid dosing units, said liquid dosing receiving elements being provided at spaced locations, said liquid dosing receiving elements releasably holding liquid dosing elements and cooperating to form an array of liquid dosing elements; an intermediate section positioned above and behind said inclined surface, said intermediate section including a setting and control unit; and an upper section positioned substantially vertically above said intermediate section, said upper section including a viewing and indicator unit; and, an extension arm mounted on said lower portion, said extension arm extending outwardly on one side of said unit, said extension arm is supported on tracks within a hollow compartment formed in said lower section, said hollow compartment and tracks extending through said lower section such that said extension arm may be positioned on either a first side or a second side of said lower section.

5,007,689

INFRA-RED TRANSMITTING OPTICAL COMPONENTS AND OPTICAL COATINGS THEREFOR

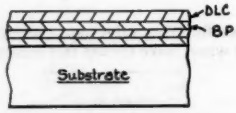
Christopher J. Kelly, Hyndland, Scotland, and Keith L. Lewis, Malvern, England, assignors to Barr & Stroud - U.K. Ministry of Defence, United Kingdom

Filed Aug. 30, 1989, Ser. No. 400,333

Claims priority, application United Kingdom, Sep. 8, 1988, 8821116

Int. Cl.[5] G02B *1/10, 5/26*

U.S. Cl. 350—1.6 **13 Claims**



1. An infra-red transmitting optical component having an anti-reflecting coating thereon of boron phosphide, the coating having been deposited on the component by plasma-assisted chemical vapor deposition at a temperature of less than about 500° C. and having a disordered non-crystalline structure.

5,007,690

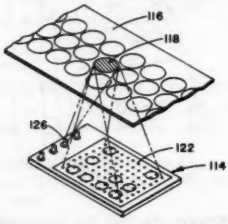
HOLOGRAPHIC DATA STORAGE AND RETRIEVAL SYSTEM

Mao-Jin Chern, Rancho Palos Verdes; Ronald T. Smith, Redondo Beach, both of Calif., and Brent C. Frogget, Los Alamos, N. Mex., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 21, 1989, Ser. No. 326,711

Int. Cl.[5] G02B *5/32;* G11B *7/00;* G11C *13/04*

U.S. Cl. 350—3.68 **4 Claims**



1. A holographic data storage and retrieval system comprising:

a plurality of reflective diffusing holographic memory elements having holographically stored therein data to be read;

a laser positioned to illuminate said reflective diffusing holographic memory elements;

a detector array positioned to be illuminated by laser light reflected by said reflective diffusing holographic memory elements, said detector array having a plurality of detectors thereon so that at least one of said detectors is illuminated to correspond to data information stored in said memory elements, and said detector array is moveable with respect to said plurality of reflective holographic memory elements so that one of said memory elements can be positioned with respect to said array to be illuminated by said laser and reflect to said array;

means for selecting which of said reflective holographic memory elements will reflect laser light to said detector array;

a memory plate is fixed in position and said detector array is movable with respect to said memory plate so as to permit movement of said detector array to a selected position with respect to said memory plate to read the reflections from said laser off of said selected memory element; and

an optical reflective holographic reader wherein said detector array and said laser are both mounted on said reader and said reader is movable with respect to said memory plate wherein said reader faces said memory plate and said reader is movable on rectangular axes with respect to said memory plate and said plurality of memory elements on said memory plate is arranged in a rectangular pattern.

5,007,691

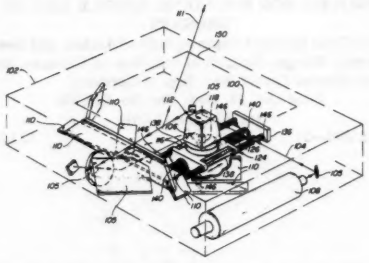
METHOD AND APPARATUS FOR BEAM SWEEPING IN A LASER SCANNER

Mohan L. Bobba, and Howard H. Nojiri, both of Eugene, Oreg., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Aug. 28, 1989, Ser. No. 398,920

Int. Cl.[5] G02B *26/08*

U.S. Cl. 350—6.7 **18 Claims**



1. Beam sweeping apparatus for use in a laser scanner to receive a laser beam traveling along a path from a laser beam generating means and sweep the laser beam onto reflecting means which projects a scanning pattern beyond the laser scanner for each sweep of said laser beam, said beam sweeping apparatus comprising:

mirror means for receiving and directing said laser beam onto said reflecting means;

rotary drive means for supporting and rotating said mirror means to sweep said laser beam onto said reflecting means; and

linear drive means for supporting and linearly moving said rotary drive means generally along the path of said laser beam to vary the point of focus of said laser beam along its projected direction beyond the laser scanner and thereby expand the effective depth of field of the laser scanner.

5,007,692

LASER BEAM SCANNING SYSTEM

Kazuo Matsuura, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1989, Ser. No. 455,598

Claims priority, application Japan, Dec. 29, 1988, 63-334762

Int. Cl.[5] G02B *26/08;* H01J *3/14*

U.S. Cl. 350—6.8 **10 Claims**

1. A laser beam scanning system comprising:

laser beam generating means for generating a laser light beam which is linearly polarized;

electro-optical means for selectively varying or not varying the polarized direction of the laser light beam generated from said laser beam generating means;

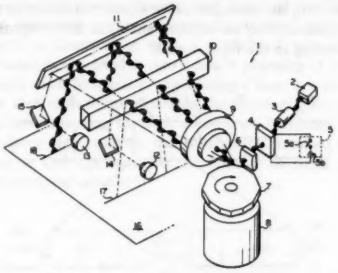
a first beam receiving station;

a second beam receiving station;

scanning means for scanning the first and second beam receiving stations with the laser light beam after it has passed through said electro-optical means, and

means for directing the laser light beam of which the polar-

ized direction has been varied by said electro-optical means to said first beam receiving station and for directing



the laser light beam of which the polarized direction has not been varied to said second beam receiving station.

5,007,693

METHOD FOR CONTROLLING POLARIZATIONS OF SIGNAL LIGHTS IN AN OPTICAL FREQUENCY DIVISION MULTIPLEX COHERENT COMMUNICATION SYSTEM

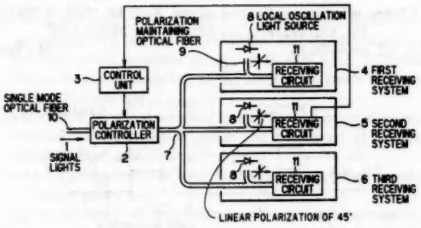
Shuntaro Yamazaki; Takashi Ono, and Haruhito Shimizu, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 16, 1990, Ser. No. 494,381

Claims priority, application Japan, Mar. 16, 1989, 1-65716

Int. Cl.[5] H04B *10/00*; G02F *2/00*

U.S. Cl. 350—96.13 **4 Claims**



1. A method for controlling polarizations of signal lights in an optical frequency division multiplex coherent communication system, comprising steps of:

propagating frequency division multiplex signal lights through an optical fiber;

controlling polarizations of said frequency division multiplex signal lights collectively;

controlling relative polarization states of local oscillation lights in receiving systems including optical heterodyne or homodyne receivers to coincide to each other; and

receiving said frequency division multiplex signal lights having collectively controlled polarizations in accordance with said local oscillation lights separately by said receiving systems.

5,007,694

LIGHT WAVELENGTH CONVERTER

Osamu Yamamoto, and Toshihiko Yoshida, both of Nara, Japan, assignors to Sharp, Kabushiki Kaisha, Osaka, Japan

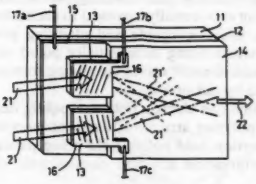
Filed Dec. 28, 1989, Ser. No. 457,320

Claims priority, application Japan, Dec. 29, 1988, 63-334135

Int. Cl.[5] G02B *6/10*

U.S. Cl. 350—96.14 **7 Claims**

1. A light wavelength converter comprising a substrate that is made of a non-linear optics material; an optical waveguide that is formed on the surface of said substrate; a light source that irradiates said optical waveguide with a pair of lights having a fundamental wavelength, said pair of lights being propagated within said optical waveguide and intersecting each other within said optical waveguide to thereby generate a



second harmonic light; and a light deflection means that changes the intersection angle between the pair of lights based on an electric signal that is input into said light deflection means.

5,007,695

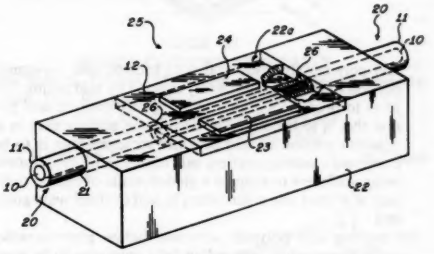
FIBER OPTIC PHASE MODULATOR USING ELECTRO-OPTIC MATERIAL IN EVANESCENT FIELD

Chin L. Chang, West Covina, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 29, 1989, Ser. No. 415,014

Int. Cl.[5] G02B *6/00*; G02F *1/29*

U.S. Cl. 350—96.14 **7 Claims**



1. A phase modulator for use with an optical fiber having a fiber core and cladding, a light wave propagating in said fiber core having an evanescent field in said cladding, comprising

electro-optical material disposed proximate said fiber core to access said evanescent field, said electro-optic material having a variable index of refraction, the propagation velocity of said light wave being determined by said index of refraction, and

electrode means disposed proximate said electro-optic material to apply an electric field having an electric field distribution thereacross that is parallel to said electro-optic material, said electric field arranged to vary said index of refraction and said propagation velocity of said light wave in accordance with applied electric field, thereby modulating the phase of said light wave.

5,007,696

ELECTRO-OPTIC CHANNEL WAVEGUIDE

John I. Thackara, Sunnyvale; George F. Lipscomb, Palo Alto, both of Calif.; Hyun-Nam Yoon, New Providence, and Ronald N. De Martino, Wayne, both of N.J., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Division of Ser. No. 225,450, Jul. 28, 1988. This application Jan. 8, 1990, Ser. No. 461,727

Int. Cl.[5] G02B *6/10*

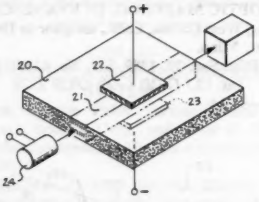
U.S. Cl. 350—96.14 **19 Claims**

1. A polymer structure having an electro-optic channel

waveguide formed therein, said polymer structure consisting of a substantially non-linear optical polymer, said polymer structure comprising a waveguide portion and a cladding portion, said cladding portion abutting said waveguide portion so as to define a configuration for said channel waveguide, said waveguide portion and said cladding portion of said polymer structure being substantially identical to each other in chemical composition, said waveguide and cladding portions of said polymer structure being differentially poled with respect to each other, said channel waveguide being formed in said polymer structure by the process of:

(a) maintaining an electric field as a poling field in a portion of said polymer structure that is to become said waveguide portion, said poling field being patterned to define the configuration for said electro-optic channel waveguide;

(b) maintaining said polymer structure in a temperature range above glass-transition temperature for said polymer while said poling field is being maintained in said portion of said polymer structure that is to become said waveguide portion, said polymer structure being maintained above glass-transition temperature for a time sufficient to cause dipolar moieties of said polymer in said portion of



said polymer structure that is to become said waveguide portion to become sufficiently aligned by said poling field so as to produce a higher index of refraction in said portion that is to become said waveguide portion than in an adjacent portion of said polymer structure that is to become said cladding portion, said higher index of refraction being sufficient to support a guided mode of optical radiation of at least one polarization in said channel waveguide; and

(c) cooling said polymer structure below glass-transition temperature while said poling field continues to be maintained in said portion of said polymer structure that is to become said waveguide portion, said poling field being maintained in said portion that is to become said waveguide portion for a sufficient time as said polymer structure is being cooled below glass-transition temperature so that the aligned dipolar moieties of said polymer in said portion of said polymer structure that is to become said waveguide portion can achieve thermal relaxation only after a time that is long relative to a useful lifetime of said polymer structure in an application utilizing said waveguide portion of said polymer structure as said electro-optic channel waveguide.

5,007,697

FIBRE OPTIC DATA COUPLER

Rajan Chadha, Glasgow, Scotland, assignor to The British Petroleum Company, plc, London, England

Filed Aug. 11, 1989, Ser. No. 392,755

Claims priority, application United Kingdom, Aug. 17, 1988, 8819574

Int. Cl.[5] G02B *6/26;* G02F *1/00*

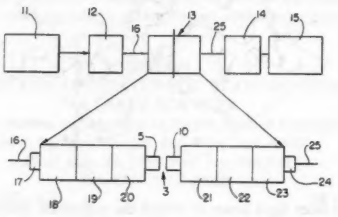
U.S. Cl. 350—96.15 **10 Claims**

1. A fibre optic data coupler comprising:

(a) a fibre optic data link input module comprising an input connector for a fibre optic connected to a fibre optic receiver for providing a digital electrical output signal corresponding to the fibre optic signal,

(b) a coupler drive module for converting the digital electrical output signal to an analogue drive signal for input to an inductive coupler,

(c) an inductive coupler unit comprising an inlet element for receiving the analogue drive signal and an outlet element for transmitting an induced analogue drive signal, corresponding to the input signal,



(d) a coupler output module for converting the induced analogue drive signal to a digital electrical output signal for input to a fibre optic data link output module, and

(e) a fibre optic data link output module comprising a fibre optic transmitter module, for providing a fibre optic signal corresponding to the digital electrical input signal, connected to a connector for a fibre optic.

5,007,698

OPTICAL FIBER AMPLIFIER/MULTIPLEXER

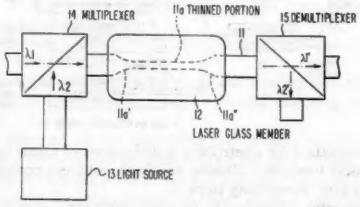
Kazuya Sasaki, Mitaka; Sakae Yoshizawa, Tokyo; Shinya Inagaki, Tokyo, and Keiko Takeda, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 15, 1990, Ser. No. 567,614

Claims priority, application Japan, Aug. 15, 1989, 1-209700

Int. Cl.[5] G02B *6/26;* H01S *3/30;* H04J *1/00*

U.S. Cl. 350—96.15 **24 Claims**



1. An optical waveguide amplifier for amplifying an optical signal propagating therein, comprising:

a laser glass member, doped with a rare earth element, and optical waveguide means, including:

input end means for receiving the optical signal from a light source, and

amplifying means, formed substantially thinner than the input end means, for contacting the laser glass member and for amplifying the optical signal.

5,007,699

FIBER OPTIC REFLECTIVE TREE ARCHITECTURE

James C. Stout, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 19, 1989, Ser. No. 423,901

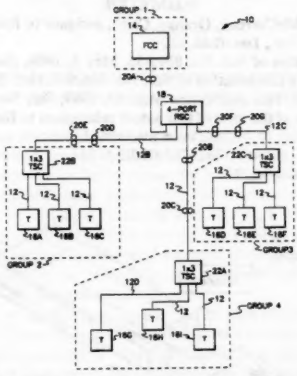
Int. Cl.[5] G02B *6/28;* G02F *1/00*

U.S. Cl. 350—96.16 **3 Claims**

1. A fiber optic network contained within a structure, the structure being divided into a first plurality of compartments by a second plurality of bulkheads, said fiber optic network comprising:

(a) a reflective star coupler, being located in a predetermined compartment of said structure, and having m ports;

(b) a third plurality of terminals, each terminal being located in one of said compartments, each terminal capable of at least receiving optical signals containing information therein in accordance with a predefined protocol, the terminals being divided into a fourth plurality of terminal groups, each terminal group having a least one terminal, such that each terminal within the terminal group has at least one coupling through a common bulkhead to said reflective star coupler, the number of terminal groups being m corresponding to the number of ports of said reflective star coupler;



(c) m fiber optic cables, each fiber optic cable operatively connected to a port of the reflective star coupler and to a predetermined terminal group, such that each bulkhead has at most one coupling of the fiber optic cable through said bulkhead; and

(d) said each terminal terminal group having more than one terminal in the terminal group and contained in a single compartment, comprises:

(i) a 1×n transmissive coupler, having an input port and n output ports; and

(ii) a plurality of terminals, each terminal operatively connected to the transmissive coupler, and wherein the input port is operatively connected to the reflective star coupler via one of said m fiber optic cables, where m is equal to the number of terminals in the terminal group.

5,007,700

EDGE-EMITTING DIODE-TO-OPTICAL FIBER COUPLING TECHNIQUE

Donald J. Albares, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 318,989, Mar. 3, 1989, Pat. No. 4,930,854. This application Apr. 13, 1990, Ser. No. 509,107

Int. Cl.[5] G02B *6/42*

U.S. Cl. 350—96.17 **12 Claims**

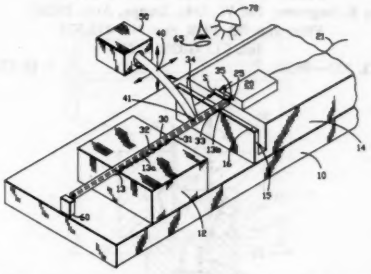
1. A method of end-on optically coupling an optical fiber to the emitting aperture of an edge-emitting diode (EED) mounted on a base comprising:

mounting a semiconductor chip provided with a V-shaped groove on said base in a spaced-apart relationship with respect to said EED;

applying a UV curable optical cement in said V-shaped groove and on an exposed lateral surface of an overhanging portion of said optical fiber;

placing said optical fiber in said V-shaped groove to locate said overhanging portion including said lateral surface having the UV curable optical cement applied thereto on an end support rigidly affixed to said EED;

positioning said optical fiber to a position in which the end of said optical fiber has a position of desired optical alignment with said emitting aperture of said EED and a desired separation from said emitting aperture of said EED; and



radiating UV energy on said UV curable optical cement to cure it and to secure said optical fiber in said V-shaped groove and on said end support via said lateral surface on said overhanging portion o said optical fiber in said position of said desired optical alignment of said end of said optical fiber with said emitting aperture of said EED and said desired separation of said end of said optical fiber from said emitting aperture of said EED.

5,007,701

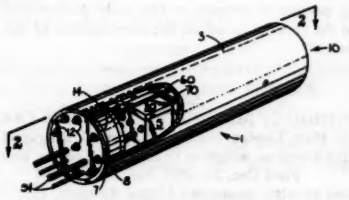
SPLICE CLOSURE APPARATUS

Gene Roberts, Clinton, Mo., assignor to Windsor Communications, Inc., Windsor, Mo.

Filed Jun. 29, 1989, Ser. No. 373,343

Int. Cl.[5] G02B *6/36*; H02G *15/08*

U.S. Cl. 350—96.20 **16 Claims**



1. In a splice closure having an internal compartment wherein a cable passes through a wall of the closure; the improvement comprising:

(a) compression anchoring means positioned in said compartment for securing said cable within said closure; and

(b) a hoop encircling said anchoring means to prevent radial expansion of said anchoring means, when compressed, beyond said hoop.

4. In a fiber optics closure adapted to receive a plurality of elongate fiber optic members wherein the elongate fiber optic members are passed through a compressible sealing barrier and joined in an internal compartment; the improvement comprising:

(a) said sealing barrier having an inner compressible portion and an outermost wall constructed of a non-conductive and non-corrosive material; said outermost wall adapted to cooperate with an inner wall and bolt means to compress said sealing barrier therebetween upon tightening of said bolt means when in an operational configuration; and

(b) said outermost wall including a plurality of back-to-back

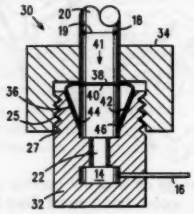
components with one of said components directly abutting said compressible portion; said components constructed of resilient material to prevent damage to said fiber optics from inadvertent overtightening of said bolt means.

5,007,702

FIBER OPTIC CABLE RETAINER

Eugene E. Segerson, 108 W. Erie, Tempe, Ariz. 85282

Filed Jan. 30, 1990, Ser. No. 472,523
Int. Cl.[5] G02B *6/26*
U.S. Cl. 350—96.20 **15 Claims**



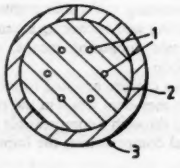
1. A device facilitating unidirectional movement of a fiber optic cable during assembly, comprising, a body portion, a retainer of a springy material and a locking portion, wherein the body portion has an opening therein for admitting the fiber optic cable extending from an exterior of the body portion to an internal electro-optical component, wherein an outer part of the opening nearest the exterior is larger than an interior part of the opening, wherein the retainer resides in the outer part of the opening, wherein the retainer has an interior diameter at a first end oriented toward the interior part of the opening slightly smaller than the cable and an interior diameter at an opposite end larger than the cable so that when the cable is pushed through the retainer toward the interior the smaller end of the retainer expands slightly to allow passage of the cable and when an attempt is made to retract the cable the smaller end of the retainer bites into the cable, and wherein the locking portion is coupled to the body portion and presses against the retainer to adjust the cross-section of the interior end thereof.

5,007,703

METHOD OF MAKING OPTICAL FIBRE CABLES

Peter G. Hale, London, and John N. Russell, Ringwood, both of United Kingdom, assignors to STC plc, London, England

Filed Dec. 21, 1989, Ser. No. 454,184
Claims priority, application United Kingdom, Dec. 22, 1988, 8829871
Int. Cl.[5] G02B *6/44*; H02G *15/00*; B21D *39/00*
U.S. Cl. 350—96.23 **10 Claims**



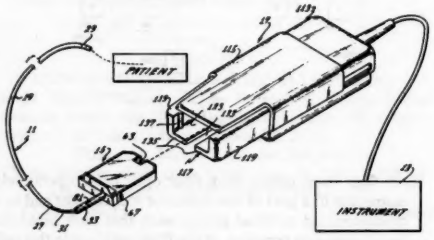
1. A method of manufacturing a core for an optical fibre submarine cable comprising the steps of feeding a plurality of optical fibres in a spaced apart relationship into a space delimited by one or more elongate elements from which a tubular structure can be formed, injecting a liquid filling material into the space, forming said tubular structure and permitting or causing the liquid filling material to be converted to a solid material in which the fibres are embedded at respective positions spaced apart from one another and the tubular structure.

5,007,704

OXIMETER

Ronald L. McCartney, Orange, Calif., assignor to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 859,855, May 1, 1986, abandoned, which is a continuation of Ser. No. 546,500, Oct. 28, 1983, abandoned. This application Mar. 14, 1989, Ser. No. 323,054
The portion of the term of this patent subsequent to Dec. 8, 2004, has been disclaimed.
Int. Cl.[5] G02B *6/38*
U.S. Cl. 350—96.21 **14 Claims**



1. An apparatus comprising: at least one fiber optic light conductor; a connector body having a proximal end and an exterior face at said proximal end; means for mounting the fiber optic light conductor on the connector body with an end of the fiber optic light conductor being adjacent the face and capable of transmitting light to or from a location on said face;

a receptacle having a cavity for receiving the connector body, a floor, a face partly defining said cavity and means for transmitting light to or from a location on said face of said receptacle;

guide means at least partially on the receptacle comprising a cam surface on the face of the receptacle and a cam follower surface on the face of the connector body for guiding the connector body along a path in the cavity to move said faces toward each other to place said faces in confronting relationship and said locations substantially into engagement;

said path having a first section extending in a first direction into said cavity and a second section extending in a second direction along said cam surface on said receptacle, wherein said cam follower surface on said connector body cooperates with said cam surface on said receptacle to lift the proximal end of said connector body off the floor of said receptacle to place said locations substantially into engagement;

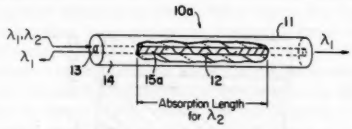
said connector body having a cam surface; and said receptacle having biasing means for cooperation with said cam surface on said connector body when the connector body is in the cavity of the receptacle and said locations are nearly in engagement for urging the connector body farther into the cavity along said path to move said faces toward each other and to place said locations on said faces in substantial engagement.

5,007,705

VARIABLE OPTICAL FIBER BRAGG FILTER ARRANGEMENT

William W. Morey, West Hartford; Fred J. Leonberger, Glastonbury; William H. Glenn, Vernon, and Gerald Meltz, Avon, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 26, 1989, Ser. No. 456,449
Int. Cl.[5] G02B 6/16
U.S. Cl. 350—96.29 20 Claims



1. A variable light filtering arrangement comprising

at least one optical fiber section including a waveguiding core;

at least one permanent Bragg grating region in said optical fiber section, including a plurality of grating elements constituted by periodic refractive index variations of a predetermined initial periodicity and cumulatively redirecting, of the light launched into said core for guided propagation therein, that having an axial wavelength within a narrow band around a central wavelength that is determined by the periodicity and refractive index variations of said grating elements; and

means for so applying at least to said grating region of said optical fiber section an external influence that is representative of a parameter other than structural strain as to modify at least one of the periodicity and refractive index variations of said grating region with an attendant change in said central wavelength within a predetermined wavelength range to an extent indicative of the magnitude of said parameter.

5,007,706

POLYMERIC OPTICAL FIBER

Theodore L. Parker, Lafayette, Calif., and Donald J. Perettie, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/US87/00372, § 371 Date Oct. 8, 1987, § 102(e) Date Oct. 8, 1987, PCT Pub. No. WO87/05117, PCT Pub. Date Aug. 27, 1987
PCT Filed Feb. 19, 1987, Ser. No. 143,997
Int. Cl.[5] G02B 1/04
U.S. Cl. 350—76.34 5 Claims

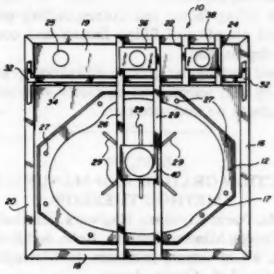
1. A polymeric optical fiber having a core and cladding structure characterized by (a) the core essentially comprising a copolymer of at least one monovinylidene aromatic monomer and alpha-methylstyrene prepared by anionically polymerizing the monovinylidene aromatic monomer and from 30 to 70 weight percent of alpha-methylstyrene based on the combined weight of monomer, at a temperature greater than 61° C. and less than the ceiling temperature of the monovinylidene aromatic monomer; and (b) the cladding essentially comprising a polymer having a refractive index of at least 3 percent less than the refractive index of the copolymer core and having sufficient adhesion to the copolymer core such that less than 15 percent attenuation of light transmission occurs upon bending of the polymeric optical fiber to a radius equal to thrice the radius of the polymeric optical fiber.

5,007,707

INTEGRATED SOUND AND VIDEO SCREEN

Jose J. Bertagni, 39 Seabrook Cove, Newport Beach, Calif. 92660

Filed Oct. 30, 1989, Ser. No. 428,893
Int. Cl.[5] G03B 21/56
U.S. Cl. 350—118 25 Claims



1. A sound transducer comprising:

a plurality of sound transducers arranged adjacent to one another so as to form a grid pattern wherein the sound transducers are flat sound transducers, each of said flat sound transducers having a substantially flat sound producing diaphragm with substantially omnidirectional sound dispersion characteristics and wherein the flat diaphragms of the flat sound transducers have a reflective surface such that the sound transducer system may serve as a projection screen;

the grid pattern being formed by the sound transducers being divided into a plurality of separately addressable sound producing regions where a sound producing region includes at least one sound transducer; and

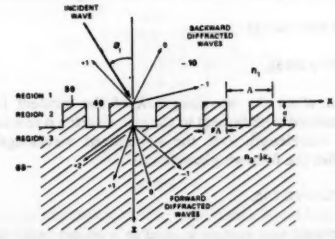
control means for controlling the separately addressable sound producing regions such that the sound produced by the sound transducers may be controlled in conjunction with a video image that is being projected on the projection screen.

5,007,708

TECHNIQUE FOR PRODUCING ANTIREFLECTION GRATING SURFACES ON DIELECTRICS, SEMICONDUCTORS AND METALS

Thomas K. Gaylord; Elias N. Glytsis, both of Atlanta, Ga.; M. Gamal Moharam, Charlottesville, Va., and William E. Baird, Oxford, Ga., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Jul. 26, 1988, Ser. No. 224,571
Int. Cl.[5] G02B 26/00; G02F 1/00
U.S. Cl. 350—162.2 28 Claims



9. A method of manufacturing an antireflection rectangular groove surface-relief grating comprising the steps of:

selecting a substrate material on which to form the surface-relief grating;

determining the polarization and range of wavelengths and angles of incidence of the electromagnetic waves incident on said substrate;

selecting a lossless medium in which said electromagnetic waves propagate;

determining the plurality of filling factors and corresponding groove depths for said rectangular-groove grating which will make said grating equivalent to a single homogeneous lossy layer;

selecting a filling factor and corresponding groove depth from said plurality of filling factors and corresponding groove depths; and

forming said rectangular groove diffraction grating characterized by said selected filling factor and corresponding groove depth on said substrate.

5,007,709

DIFFRACTION GRATING AND MANUFACTURING METHOD THEREOF

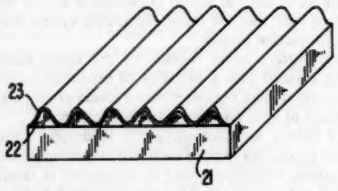
Masanori Iida, Nara; Kiyokazu Hagiwara, Hirakata; Hiroyuki Asakura, Osaka; Minoru Nishioka, Kobe, and Koichi Murase, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 17, 1988, Ser. No. 290,196

Claims priority, application Japan, Dec. 28, 1987, 62-331972; Dec. 28, 1987, 62-331978

Int. Cl.[5] G02B *5/18*

U.S. Cl. 350—162.22 **6 Claims**



1. A diffraction grating for diffracting light incident thereupon, comprising:

a substrate;

a photosensitive layer formed on said substrate and having formed on a surface thereof a pattern of cyclic grooves; and

a reflection film formed on said surface of said photosensitive layer,

wherein said grating has a groove profile $\eta(x)$ given by:

$$\eta(x)=h[\sin(Kx)+\gamma\sin(2Kx-90°)],$$

where a direction perpendicular to the groove is indicated by x-axis, a groove pitch is indicated by d, $K=2\pi/d$, and parameters h and γ satisfy the following conditions:

$$0.26\leqq 2h/d\leqq 0.52$$

$$0.05\leqq\gamma\leqq 0.32,$$

wherein when the wavelength λ of the incident light is normalized with respect to the groove pitch d to a normalized wavelength λ/d, the normalized wavelength λ/d satisfies the following condition:

$$0.67\leqq\lambda/d\leqq 1.15,$$

and wherein said grating is used in a mount satisfying the following condition:

$$\Theta_L-5°\leqq\Theta\leqq\Theta_L+5°,$$

where Θ denotes the incident angle of the incident light and Θ_L denotes the first order Littrow angle.

5,007,710

MULTI-LAYERED SURFACE REFLECTING MIRROR

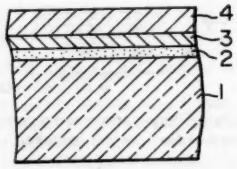
Yuji Nakajima, Suginami, and Masashi Mochizuki, Hoya, both of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Oct. 23, 1989, Ser. No. 425,119

Claims priority, application Japan, Oct. 31, 1988, 63-275097

Int. Cl.[5] G02B *5/08, 5/28*

U.S. Cl. 350—166 **10 Claims**



1. A multi-layered surface reflecting mirror comprising a substrate, a metal or semiconductor film formed on one side of the substrate and a dielectric multi-layered film formed on the metal or semiconductor film, said dielectric multi-layered film consisting of a low refractive index material layer having an optical thickness in the range of 0.05 λo ($\lambda o/20$)–0.4 λo (2/5 λo), where λo is the wavelength of a light used as the reference measurement for design purposes, and a high refractive index material layer having an optical thickness of $\lambda o/2$, said low refractive index material layer being closer to the metal or semiconductor film relative to said high refractive index material layer, and said high refractive index material layer being closer to the atmosphere relative to said low refractive index material layer.

5,007,711

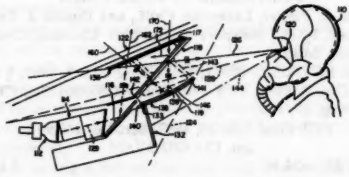
COMPACT ARRANGEMENT FOR HEAD-UP DISPLAY COMPONENTS

Robert S. Wood, Hillsboro, and Mark A. Thomas, Lake Oswego, both of Oreg., assignors to Flight Dynamics, Inc., Portland, Oreg.

Filed Nov. 30, 1988, Ser. No. 278,198

Int. Cl.[5] G02B *5/32, 27/14;* G03H *1/30*

U.S. Cl. 350—174 **19 Claims**



1. An arrangement for head-up display system components within the cockpit of an aircraft, wherein the cockpit includes a canopy through which the pilot observes the outside real world scene, an over-nose vision surface beneath which the pilot cannot view the outside real world scene, and an imaginary ejection plane extending across the cockpit forward of the pilot, the arrangement comprising:

wavelength selective combiner means located forward of the pilot and mounted to extend across the pilot's line of sight when the pilot views the outside real world scene, for reflectively diffracting wavelengths of incident light lying within a preselected bandwidth and striking the combiner means within a preselected range of angles of incidence and for transmitting other wavelengths of incident light;

source means mounted within the cockpit beneath the over-nose vision surface forward of and spaced away from the ejection plane for projecting information-carrying source light of wavelengths lying within the preselected bandwidth;

upper mirror means of wavelength selective character mounted within the cockpit above the over-nose vision surface, forward of the combiner means, and across the pilot's line of sight through part of the combiner means for reflectively diffracting the source light emanating from the source means to strike the combiner means at a first angle of incidence to the combiner means, the first angle of incidence lying outside the preselected range of angles of incidence; and

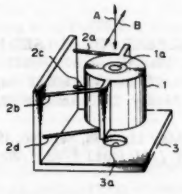
collimator means mounted below the over-nose vision surface for collimating the source light reflectively diffracted by the upper mirror means and for directing the collimated source light to the combiner means at a second angle of incidence to the combiner means, the second angle of incidence lying within the preselected range of angles of incidence.

5,007,712

OPTICAL PICK-UP UNIT

Ikuya Kikuchi, and Ryo Sato, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 22, 1988, Ser. No. 234,547
Claims priority, application Japan, Jan. 21, 1988, 63-6061[U]
Int. Cl.[5] G02B *7/02*
U.S. Cl. 350—255 **2 Claims**



1. An optical pick-up unit mounted on a pick-up carriage of an optical disc player, said pick-up unit comprising:

a holder for holding an objective lens having an optical axis passing therethrough;

a base mount mounted on said pick-up carriage;

resilient support means for resiliently supporting said holder so that said holder can be translated in each of a focusing and a tracking direction relative to said base mount, said focusing direction being parallel to the optical axis of said lens and said tracking direction being transverse to said focusing direction; and

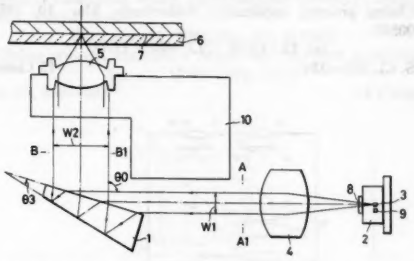
wherein said resilient support means comprises first and second pairs of resilient filamentary members interconnecting between said base mount and said holder, said filamentary members each being of equal length and attached to said holder at points equidistant from said optical axis of said lens, said points lying in a plane which passes through the optical axis of said lens, said first pair of filamentary members being disposed in a first plane perpendicular to the focusing direction, and said second pair of filamentary members being disposed in a second plane spaced from and parallel to said first plane and perpendicular to the focusing direction, the filamentary members within each of said first and second pairs being spaced apart from one another on said base mount and said holder, and wherein, a greater distance separates the filamentary members with respect to each of said first and second pairs on the base mount than on the holder.

5,007,713

BEAM CONVERTING APPARATUS WITH A PARALLEL LIGHT BEAM INPUT AND OUTPUT FROM ONE PRISM PLANE

Koji Yoshifusa, and Taizo Yokota, both of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1990, Ser. No. 527,779
Claims priority, application Japan, May 27, 1989, 1-133488
Int. Cl.[5] G02B *5/04, 13/10;* G11B *7/135*
U.S. Cl. 350—286 **4 Claims**



1. A beam converting apparatus comprising:

a semiconductor laser element,

means for converting the laser beam from the semiconductor laser element into a parallel beam, and

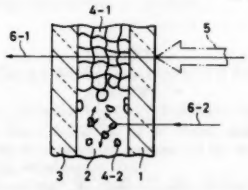
a prism possessing a first plane for receiving and transmitting the parallel beam and a second plane for fully reflecting so that the beam entering from the first plane may be emitted from the first plane, wherein the apex angle of the first plane and second plane is defined so that the sum of the incidence angle ($\theta 1$)to the normal of the first plane and the exit angle ($\theta 2$) to the normal of the first plane of the beam fully reflected from the second plane emitted from the first plane, ($\theta 1 + \theta 2$), is about 90 degrees.

5,007,714

OPTICAL DEVICE

Yukuo Nishimura, Sagamihara; Masahiro Haruta, Tokyo; Hirohide Munakata, Yokohama; Yoko Kuwae; Toshihiko Miyazaki, both of Tokyo, and Satoshi Yuasa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 810,249, Dec. 18, 1985, abandoned. This application Nov. 16, 1987, Ser. No. 120,789
Claims priority, application Japan, Dec. 24, 1984, 59-272351; Dec. 24, 1984, 59-272352; Dec. 24, 1984, 59-272353; Dec. 24, 1984, 59-272354; Dec. 24, 1984, 59-272355; Dec. 24, 1984, 59-272356; Dec. 26, 1984, 59-276945; Dec. 26, 1984, 59-276946; Dec. 26, 1984, 59-276947
Int. Cl.[5] G02F *1/01;* G02B *5/23;* G09G *3/34*
U.S. Cl. 350—353 **2 Claims**



1. An optical device, which comprises a liquid layer containing a liquid-absorbable and releasable polymer that absorbs and releases a liquid under thermal action, and a liquid, wherein said liquid-absorbable and releasable polymer is a crosslinked polymer and absorbs a liquid to undergo swelling and releases the liquid to undergo shrinking, and said liquid contains pig-

ments or polymer-bound dyes, wherein said pigments or polymer-bound dyes do not penetrate the inside of said liquid-absorbable and releasable polymer when said polymer absorbs the liquid.

5,007,715

DISPLAY AND PICK-UP DEVICE FOR STEREOSCOPIC PICTURE DISPLAY

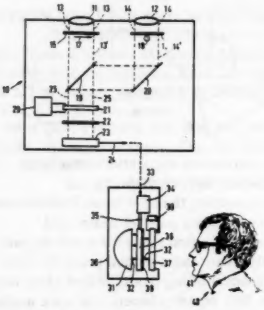
Antonius G. H. Verhulst, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 21, 1989, Ser. No. 313,666

Claims priority, application Netherlands, Mar. 10, 1988, 8800595

Int. Cl.[5] G02F *1/13*; H04N *13/00*

U.S. Cl. 350—334 **15 Claims**



1. A stereoscopic system, comprising:

imagining means for forming first and second optical images of a scene and for combining said images in superposed relation, said first image being characterized by a first optical polariation and said second image being characterized by a second optical polarization, different from said first optical polarization; and

first display means, in optical communication with said imaging means, for formig a first pattern of optical picture elements corresponding to said first image and a second pattern of optical picture elements corresponding to said second image, the optical picture elements of said first and second patterns being characterized by the same optical polarization.

5,007,716

LIQUID CRYSTAL DEVICE

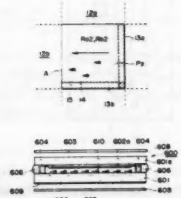
Yukio Hanyu, and Toshiharu Uchimi, both of Atsugi, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1989, Ser. No. 295,509

Claims priority, application Japan, Jan. 11, 1988, 63-004312

Int. Cl.[5] G02F *1/133*

U.S. Cl. 350—336 **14 Claims**



1. A liquid crystal device, comprising:

(a) a first substrate having a plurality of first elongated electrodes formed thereon, each first elongated electrode defining two longitudinal edges and having a first linear projection associated therewith along one of said longitudinal edges, said first substrate being provided with a uniaxial orientation axis in the direction from said first linear projection toward the other of said two longitudinal edges of said first elongated electrode associated therewith,

(b) a second substrate having a plurality of second elongated electrodes disposed thereon opposite to and intersecting with said first elongated electrodes, said second substrate being provided with a uniaxial orientation axis in the same direction as the uniaxial orientation axis provided to said first substrate, and,

(c) a chiral smectic liquid crystal disposed between said first and second substrates in a thickness small enough to suppress the formation of a helical structure inherent to said chiral smectic liquid crystal in its bulk state, said chiral smectic liquid crystal having an inclination of forming or actually forming a pair of a hairpin defect and a lightning defect, said hairpin defect being formed after said lightning defect in the direction of the uniaxial orientation axes.

5,007,717

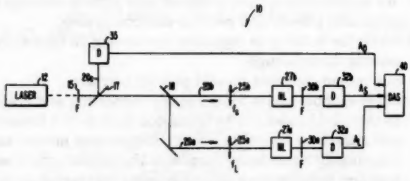
REAL TIME ANALYZER FOR PULSED LASER SYSTEMS

Antonello Cutolo, Via Albino 30, 80127 Napoli; Salvatore Solimeno, Mostra d'Oltremare, 80125 Napoli, both of Italy, and John M. J. Madey, 2120 Amherst St., Palo Alto, Calif. 94306

Filed May 11, 1988, Ser. No. 192,577

Int. Cl.[5] G02F *1/01*; G01J *1/42, 1/40*; H01J *40/14*

U.S. Cl. 350—353 **38 Claims**



1. A method for measuring a beam parameter of a laser beam characterized by at least one laser pulse comprising the steps of:

directing first, second, and third portions of the laser beam along separate first, second, and third beam paths;

focusing the first and second beam portions, each to a different degree;

passing the first and second beam portions through respective non-linear elements to generate radiation at a harmonic of the fundamental frequency in each of the first and second non-linear elements;

generating respective first and second signals representative of the energy of the harmonic radiation generated in the first and second non-linear elements;

generating a third signal representative of the total energy of the third beam portion; and

combining the first, second, and third signals to provide at least one value representative of a beam parameter.

5,007,718

ELECTROCHROMIC ELEMENTS AND METHODS OF MANUFACTURING AND DRIVING THE SAME

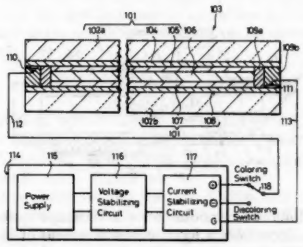
Jun Minoura; Shigeyuki Takahahi; Hisaki Kato; Toshiyasu Ito; Takaaki Mori; Mamoru Kato; Junichi Shimada, all of Nishikasugai, and Katsuaki Okabayashi, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi and Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Apr. 1, 1988, Ser. No. 176,708

Claims priority, application Japan, Apr. 2, 1987, 62-82075; Apr. 28, 1987, 62-105419; Apr. 28, 1987, 62-105420; Aug. 13, 1987, 62-202246

Int. Cl.[5] G02F *1/01;* G09G *3/34*

U.S. Cl. 350—357 11 Claims



1. An electrochromic element comprising:

a pair of electrochromic bases, each comprising a substrate, an electrode layer disposed on said substrate, and a color-forming layer dispersed on said electrode layer, said electrochromic bases being superposed such that their respective color-forming layers face each other,

an ultraviolet-setting solid electrolyte disposed between said color-forming layers of said electrochromic bases, said solid electrolyte being a mixture including an ultraviolet-setting polymeric compound, an organic solvent and an ion conducting salt.

5,007,719

VARIFOCAL IMAGING OPTICAL SYSTEM HAVING MOIRE ELIMINATING FUNCTION

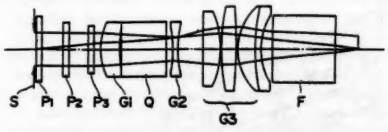
Akira Hasegawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1990, Ser. No. 516,207

Claims priority, application Japan, Apr. 29, 1989, 1-109894

Int. Cl.[5] G02B *15/14*

U.S. Cl. 350—425 21 Claims



1. An imaging optical system comprising an imaging lens system for forming an image of an object on a given image plane, the imaging lens system comprising a varifocal lens portion for allowing the imaging lens system as a whole to have different magnifications without changing the positional relationship between the object and the image plane, and a front lens portion arranged on the object side of the varifocal lens portion, the imaging lens system satisfying the following condition:

$$|\phi_{3T}| - |\phi_{3W}| \geq 0.8|(Z-1)SA31|$$

where Z is the ratio of the maximum value to the minimum value of the magnification of the imaging lens system; SA31 is the third-order coefficient of spherical aberration of the front lens portion; $|\phi_{3T}|$ is the sum of the third-order coefficients of spherical aberration of the respective lens surfaces of the imaging lens system in the state of the maximum magnification; and $|\phi_{3W}|$ is the sum of the third-order coefficients of spherical aberration of the respective lens surfaces of the imaging lens system in the state of the minimum magnification.

5,007,720

LENS SYSTEM ENABLING CLOSE DISTANCE PHOTOGRAPHING

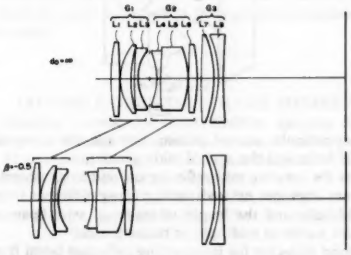
Yoshinari Hamanishi, Wako, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Apr. 23, 1990, Ser. No. 513,068

Claims priority, application Japan, Apr. 26, 1989, 1-106901

Int. Cl.[5] G02B *9/64, 15/22*

U.S. Cl. 350—463 8 Claims



1. A lens system enabling close distance photography which comprises a 1st lens group having positive refractive power, a 2nd lens group having positive refractive power and a 3rd lens group having negative refractive power, arranged in this order from the object side, wherein the 3rd lens group comprises a positive lens and a negative lens fixed relative to the image plane and the 1st lens group and the 2nd lens group are so constructed that, in focussing from infinite distance to the closest distance, they move toward the object and away from the 3rd lens group while expanding the space between them, and wherein, when the synthetic focal distance of the entire optical system at infinite distance focussing is f, the focal distance of the 1st lens group is f_1, the focal distance of the 2nd lens group is f_2, the focal distance of the 3rd lens group is f_3, the synthetic focal distance of the 1st lens group and the 2nd lens group is f_{12} and the shape factor of the positive lens in the 3rd lens group is q, the following conditions are satisfied:

wherein the shape factor g is so defined that,

$$q=(rb+ra)/(rb-ra)$$

where ra stands for the radius of curvature of the object side surface of the lens and rb stands for the radius of curvature of the image side surface of the lens.

5,007,721

MECHANICALLY ROTATED DOPPLER FREQUENCY SHIFTER

John B. Morris, Billerica; Uve H. W. Lammers, Chelmsford, and Richard A. Marr, Billerica, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 25, 1990, Ser. No. 529,032

Int. Cl.[5] G02B *5/10, 7/18, 27/00;* H01Q *15/16*

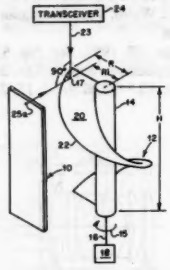
U.S. Cl. 350—486 12 Claims

1. A Doppler frequency shifter for a transmitted high frequency narrow beam, the combination comprising:

a transmitter for radiating said narrow beam, and a receiver for receiving Doppler shifted reflections of said beam;

a cylinder mounted for rotation on its axis, said axis being parallel to said beam;

a first reflector comprising a helix having a smooth reflecting surface for reflecting said beam, said helix being mounted on said cylinder and said transmitted beam impinging thereon at a radial distance Ri from said axis, the surface of said reflector being defined by an infinite number of lines drawn from every point on the outer edge of said helix to the cylinder, the extension of such lines being



perpendicular to and passing through the outer edge of said helix and the axis of said cylinder;

means for rotating said reflector on said axis, whereby said beam impinges on said surface along different heights of said helix and the length of travel of said. beam to said helix varies as said helix is rotated; and

a second reflector for intercepting reflected beam from said first reflector, and for reflecting said intercepted beam toward said receiver.

5,007,722

MIRROR APPARATUS WITH VIBRATOR FOR REMOVING WATER DROPS

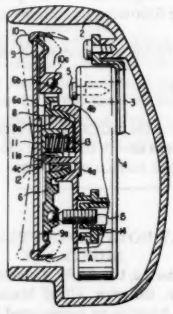
Keiji Mori, Kariya, and Hidekazu Kogita, Toyota, both of Japan, assignors to Aiskin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 1, 1989, Ser. No. 345,302

Claims priority, application Japan, Apr. 30, 1988, 63-058903[U]

Int. Cl.[5] G02B *5/08*; B60R *1/06*

U.S. Cl. 350—382 **5 Claims**



1. A mirror apparatus comprising:

a body;

a mirror member having at opposite sides thereof a reflecting surface and a backside and positioned within the body;

a vibrating member comprising means for generating vibrations and secured to the backside of the mirror member; and

a compressed spring comprising pressing means for continually pressing on the vibrating member in a direction towards the backside of the mirror member,

whereby vibrations from the vibrating members are effectively transmitted to the mirror member.

5,007,723

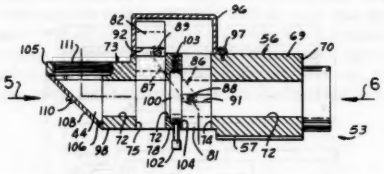
DOCUMENTATION ILLUMINATION MODULE FOR A MICROSCOPE SYSTEM

Larry K. Kleinberg, Toluca Lake, Calif., assignor to Storz Instrument Company, St. Louis, Mo.

Division of Ser. No. 50,948, May 15, 1987, Pat. No. 4,856,873. This application Feb. 21, 1989, Ser. No. 312,904

Int. Cl.[5] G02B *21/06, 21/36*

U.S. Cl. 350—508 **28 Claims**



1. An illumination module for a microscope system providing illumination from a light source to a field of view and to documentation equipment such as a camera for recording an image from the field of view by operation of said module, said module comprising:

means for transmitting light from the light source to the field of view to produce a reflected image;

said means receiving the reflected image and transmitting the reflected image without a beam splitter to the documentation equipment; and

said means including prism means to transmit the light to the field of view and the reflected image to the documentation equipment.

5,007,724

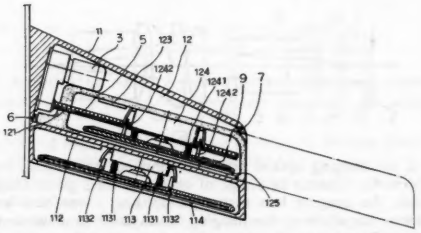
AUXILIARY MIRROR ANGLE CHANGING DEVICE FOR A MAIN AND AUXILIARY REARVIEW MIRROR

Mei-Wen H. Hou, No. 200, Fu-Chiang Road, Sec. 2, Yung Kang Shiang, Tainan Hsien, Taiwan

Filed May 30, 1990, Ser. No. 530,322

Int. Cl.[5] G02B *7/18*

U.S. Cl. 350—604 **1 Claim**



1. An auxiliary mirror angle changing device for a main and auxiliary rearview mirror comprising;

a main mirror frame;

an auxiliary mirror frame normally being moved in the interior of the main mirror frame and possible to be moved sidewise out of the main mirror frame by a motor connected with a reduction gear set to rotate a worm inserting and engaging in a threaded hole in the rear end wall of the auxiliary mirror frame, said motor being started by a switch and stopped by one of two micro switches fixed

respectively at the front end and the rear end of the main mirror frame, said micro switch being actuated by touching of one of two touch blocks provided on and under the rear end wall of the auxiliary mirror frame, said auxiliary mirror frame possible to be inclined in its angle by a device comprising;

a digital motor mounted in said auxiliary mirror frame;

a control electric circuit having its output connected with the digital motor for rotating the digital motor clockwise or counterclockwise and connected with the micro switches which can start said control electric circuit when it is touched by one of the touch block; and

a base connected with the shaft of the digital motor enveloping said motor in its interior and being inclined backward or forward by clockwise or counterclockwise rotation of the digital motor to press a plurality of springs fixed on the back of the auxiliary mirror to incline said mirror to a certain angle wanted by pushing up or down a control switch.

5,007,725

MECHANISM WITH TORQUE-LIMITING DEVICE FOR CONTROLLING A REARVIEW MIRROR

Stéphane Manzoni, Saint-Claude, France, assignor to Societe Manzoni Bouchot, France

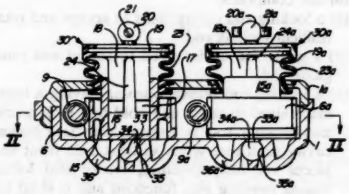
Continuation of Ser. No. 881,938, Jul. 3, 1986, abandoned, which is a continuation of Ser. No. 491,633, May 5, 1983, Pat. No. 4,598,605. This application Oct. 27, 1987, Ser. No. 115,655

Claims priority, application France, May 13, 1982, 82 08347

The portion of the term of this patent subsequent to Jul. 8, 2003, has been disclaimed.

Int. Cl.[5] B60R *1/02*

U.S. Cl. 350—633 **5 Claims**



1. A torque-limiting mechanism for operating a rearview mirror of a vehicle, said torque-limiting mechanism comprising:

a casing having a cavity therein;

a cover member mounted to said casing, said cover member having at least one opening therein;

a support member attached to said mirror, said support member further being spaced a predetermined distance from said cover member of said casing;

rotation to translation means mounted in said cavity of said casing, said rotation to translation means comprising:

a pinion gear member located in said cavity, said pinion gear member having a bore with a threaded portion therein and a spherical member mounted thereto;

a selectively translatable control member having a central axis, said selectively translatable control member being translatable along said central axis and having an external threaded diameter portion mounted to said threaded portion of said bore of said pinion gear member said selectively translatable control member further having an end portion and an opposite end portion, said end portion being pivotally attached to said support member along said central axis to permit said mirror to pivot with respect to said selectively translatable control member about a pivot axis which extends perpendicularly through said central axis, the translation of said selectively translatable control member along said central axis causing a change in the operating position of said mirror about said pivot axis thereby pivoting said mirror with respect to said selectively translatable control member about said pivot axis, said selectively translatable control member being operatively connected to said pinion gear member, whereby rotation of said pinion gear member causes the translation of said selectively translatable control member along said central axis, the center of said spherical member of said pinion gear member lying along said central axis;

motor means mounted in said casing said motor means comprising screw means tangentially engaging said pinion gear member and adapted to impart rotational movement to said pinion gear member; and

a spherical bearing attached to said casing engaging said spherical member of said pinion gear member, whereby said pinion gear member is able to pivot within said spherical bearing as a result of non-axial loads which will be imparted to said selectively translatable control member when said selectively translatable control member is translated to cause a change in the operating position of said mirror.

5,007,726

COATED EYEGLASSES FRAME MEMBER

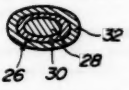
Akio Suzuki, Gunma; Hirofumi Kishita, Annaka; Shigehisa Sonegawa, Annaka; Masaaki Matumura, Annaka, and Takeshi Hoashimoto, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1989, Ser. No. 432,491

Claims priority, application Japan, Nov. 8, 1988, 63-281671

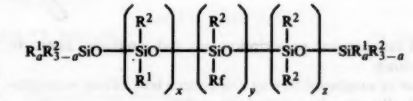
Int. Cl.[5] G02C *5/02, 5/12, 5/14*

U.S. Cl. 351—41 **6 Claims**

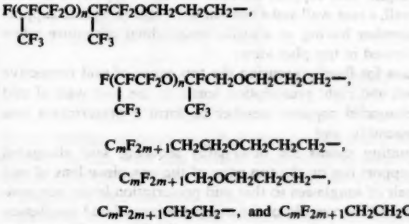


1. A frame member for eyeglasses having a surface coated with a cured fluorine-containing silicone, wherein the cured fluorine-containing silicone is a cured product of an addition reaction between an alkenyl group-containing organopolysiloxane and an organohydrogenpolysiloxane, wherein said alkenyl group-containing organopolysiloxane has the general formula (1):

(1)



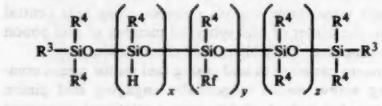
wherein R^1 is an alkenyl group having 2 to 6 carbon atoms, R^2 is an alkyl group having 1 to 8 carbon atoms or a phenyl group, Rf is a fluorinated substituent selected from the group consisting of



wherein n is an integer of 1 to 5 and m is an integer of 3 to 10,

and letters a, x, y, and z are integers within the ranges: $1 \leqq a \leqq 3$, $0 \leqq x$, $1 \leqq y$, and $0 \leqq z$, and said organohydrogenpolysiloxane has the general formula (2):

(2)



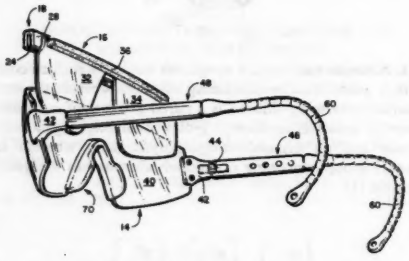
wherein R^3 is selected from the group consisting of hydrogen, an alkyl group having 1 to 8 carbon atoms and a phenyl group, R^4 is an alkyl group having 1 to 8 carbon atoms or a phenyl group, Rf is a fluorinated substituent as defined above, and letters x, y, and z are integers within the ranges $0 \leqq x$, $1 \leqq y$, and $0 \leqq z$.

5,007,727

COMBINATION PRESCRIPTION LENS AND SUNGLASSES ASSEMBLY

Alan Kahaney, 2212 Place Monaco, Del Mar, Calif. 92014, and Robert Sved, 39557 Via Temprano, Murietta, Calif. 92362

Filed Feb. 26, 1990, Ser. No. 484,884
Int. Cl.[5] G02C *9/00*
U.S. Cl. 351—47 **5 Claims**



1. A combination prescription lens and sunglasses assembly comprising:

a pair of sunglasses having a one-piece lens having a longitudinally extending top edge;

a left eye prescription lens having a top edge, an inside edge, a front surface and a rear surface;

a right eye prescription lens having a top edge, an inside edge, a front surface, and a rear surface;

an elongated support member having a predetermined length, said support member having a top wall, a front wall, a rear wall and a bottom wall, said elongated support member having an arcuate longitudinal curvature when viewed in top plan view;

means for fixedly securing the top edges of said respective left and right prescription lenses to the rear wall of said elongated support member to form a prescription lens assembly; and

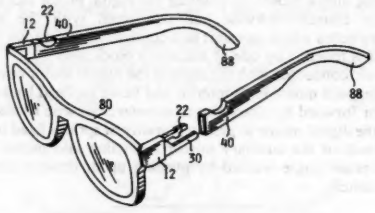
mounting means for detachably securing said elongated support bar on the top edge of the one piece lens of said pair of sunglasses so that said prescription lenses are positioned rearwardly of the one-piece lens of said sunglasses, said mounting means is a longitudinally extending groove in the bottom wall of said elongated support member.

5,007,728

DETACHABLE TWO-PIECE TEMPLE

Robert M. Magorien, 4324 Leatherwood Ct., Camarillo, Calif. 93010

Filed Dec. 26, 1989, Ser. No. 457,147
Int. Cl.[5] G02C *5/20*
U.S. Cl. 351—118 **1 Claim**



1. A detachable two-piece temple comprising:

A front piece having a front surface and a back surface, said front piece further comprising:

(1) means to swivelly attach the front surface of said front piece to the back of an eyeglass frame.

(2) a resilient locking rod that includes a lock notch and that integrally extends from the back surface of said front piece.

(3) a guide rod spaced from said locking rod and that integrally extends from the back of said front piece.

(4) a plurality of first snap lock fasteners located on the outer surface of said front piece.

B. a back piece having a front section and a back section.

(1) said front section having a forward facing cavity that further comprises:

(a) a locking rod cavity sized to accept and retain said resilient locking rod,

(b) a guide rod cavity sized to accept and retain said guide rod,

(c) a locking-rod release opening having a lock notch catch sized to catch and hold said lock notch when said locking rod is inserted into said locking rod cavity such that when so held, said front and back pieces are held together, where said locking-rod release opening also functions and is sized to allow said lock notch to be depressed and allow said back piece to be pulled away from said front piece.

(2) said back section consisting of a temple ear-piece extension that fits over the ear of the eyeglass user,

(3) a plurality of first snap lock fasteners located on the outer surface of said back piece, and

C. a combination top and side safety shield, with the top and side sections of said shield having an opening in alignment with said locking rod release opening, and with the side section of said shield having a corresponding plurality of second snap lock fasteners that when pressed into said first snap lock fasteners on said front and back pieces said combination top and side safety shield is corrected aligned and held in place, wherein said combination shield is made oversize to allow the specific eyeglass user to cut and shape said shield to conform to the contour of the individual's face.

5,007,729

WIDE ANGLE OPHTHALMIC LENS

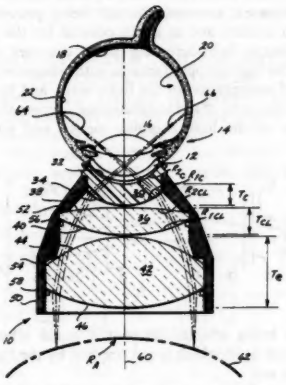
Phillip J. Erickson; Janet L. Crossman, both of Bellevue; Gregory L. Heacock, Seattle, all of Wash., and Martin A. Mainster, Overland Park, Kans., assignors to Ocular Instruments, Inc., Bellevue, Wash.

Filed Oct. 27, 1989, Ser. No. 427,882
Int. Cl.[5] A61B *3/00*; G02C *7/04*
U.S. Cl. 351—219 **6 Claims**

1. An ophthalmic lens for observing the fundus including the

peripheral retinal regions of the eye and for delivering laser energy thereto comprising:

a contact lens having a posterior surface and an anterior surface, said posterior surface having a radius of curvature (R_{2C}) compatible with the anterior surface of a cornea, the



anterior surface of the contact lens having a predetermined radius of curvature R_{1C},

an entry lens positioned anterior to the contact lens, the entry lens being aspheric, the surfaces of the entry lens being defined by the formula:

$$Z = \frac{CK^2}{1 + \sqrt{1 - C^2EK^2}},$$

wherein

$C=(1/R)$,

$E=b+1$, and

$K^2=x^2+y^2$,

wherein for the anterior surface of the lens, R ranges from 14 mm to 50 mm and b ranges from −54 to −4, and wherein for the posterior surface of said lens, R ranges from 10 mm to 25 mm and b ranges from −0.6 to −2, said entry lens having a thickness ranging from 8.5 mm to 16.5 mm, and

a center lens positioned between the contact lens and the entry lens, the optical axes of the contact lens, the center lens, and the aspheric lens being substantially coincident, the center lens having a posterior surface having a radius of curvature R_{2CL}, the anterior surface of the entry lens having a radius of curvature R_{1CL}, the center lens element receiving light rays emerging from the eye and the contact lens and refracting the light rays toward the optical axis of the ophthalmic lens, the entry lens collecting the light rays emerging from the center lens and producing an aerial image anterior to and in close proximity to the entry lens, the contact lens and the center lens element being positioned relative to each other and to the entry lens and having their radii of curvature chosen such that light rays originating in the peripheral retinal region of the eye are positioned within the aerial image produced by the entry lens,

wherein the indices of refraction of said contact lens can range from 1.44 to 1.97, R_{1C} can range from 10.49 mm to 11.95 mm and the thickness of the contact lens (T_C) can range from 0.41 mm to 7.03 mm, and wherein the indices of refraction for the center lens can range from 1.60 to 1.97, R_{2CL} can range from 60.37 mm to 97.61 mm, R_{1CL} can range from 18.48 mm to 29.88 mm and the thickness of the center lens (T_{CL}) can range from 4.29 mm to 5.29 mm.

5,007,730

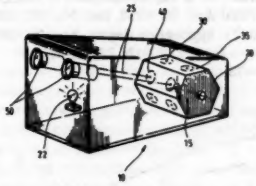
METHOD AND APPARATUS FOR MEASURING VISION BLOCKAGE RESULTING FROM GLARE

John A. McAllister, 7810 Overbrook, Houston, Tex. 77063, Tim C. Taylor, 4140 Southwest Freeway, No. 208, Houston, Tex. 77027

Continuation of Ser. No. 835,796, Mar. 3, 1986, abandoned. This application Jun. 16, 1988, Ser. No. 220,892

Int. Cl.[5] A61B *3/02, 3/10*

U.S. Cl. 351—243 **2 Claims**



1. Apparatus for measuring glare-induced vision blockage in a subject, said apparatus comprising:

a hollow polygonal cylinder mounted for rotation about a longitudinal axis;

each face of said cylinder comprising a plate;

each said plate having a light-passing window formed therein;

a viewer arranged to permit said subject to perceive at least one said plate;

a light source interior to said cylinder;

a pattern of alternating light and dark segments arranged about each said window;

said patterns being of varying actual sizes; and

an arm adapted to selectively rotate said cylinder.

5,007,731

DOPPLER FLUID FLOW VELOCITY MEASURING APPARATUS AND METHOD UTILIZING IMAGING OF SCATTERED LIGHT

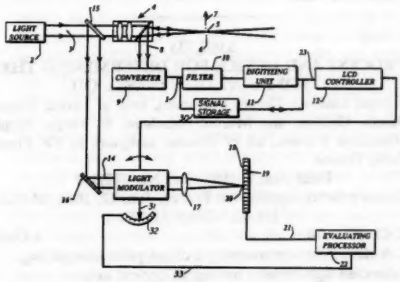
Karl-Aloys Bütefisch, Bovenden, Fed. Rep. of Germany, assignor to Deutsche Forschungsanstalt fur Luft-und Ramfahrt, Bonn, Fed. Rep. of Germany

Filed May 3, 1989, Ser. No. 347,181

Claims priority, application Fed. Rep. of Germany, May 6, 1988, 3815474

Int. Cl.[5] G01P *3/36*

U.S. Cl. 356—28.5 **11 Claims**



11. A method of measuring fluid flow velocity in a wind tunnel or the like, with said method comprising the steps of:

illuminating the fluid with a coherent light beam to produce Doppler-shifter scattered light;

registering the Doppler-shifted scattered light and converting the registered light into electric signals;

displaying the electric signals as an image;

illuminating the displayed image with a coherent light beam to produce the Fourier transformation of the image;

focusing the Fourier transformation in a Fourier plane to generate a Fourier-transformed image; and

evaluating the Fourier transformed image to determine the fluid flow.

5,007,732

FLOW-CELL DEVICE

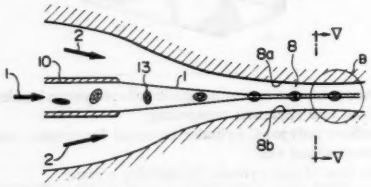
Hiroshi Ohki, Tsuchiura; Hideaki Kamohara, and Ryo Miyake, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 18, 1988, Ser. No. 182,430

Claims priority, application Japan, Apr. 20, 1987, 62-97130

Int. Cl.[5] G01N *21/00, 21/85*

U.S. Cl. 356—73 **9 Claims**



1. A sheath flow type flow-cell device for a flow-cytometer comprising:

a first inlet for sheath fluid,

a flow passage communicating with said first inlet and contracted toward downstream, said flow passage having a substantially rectangular cross section,

a straight capillary flow passage connected to said flow passage downstream thereof, said capillary flow passage having a substantially rectangular cross section,

a second inlet for sample fluid,

a nozzle communicating with said second inlet and opened within said flow passage in the same direction as the flow direction of said straight capillary flow passage,

a discharge port provided at a terminal end of said straight capillary flow passage, and

flow regulating means for regulating the flow of said sheath fluid in said straight capillary flow passage to be a laminar flow having a gradient of flow velocity, wherein said straight capillary flow passage has opposing first and second side walls connected by top and bottom walls and wherein said flow regulating means comprises said second said wall having a rougher surface than a surface of said first said wall.

5,007,733

PROCESS AND DEVICE FOR DETERMINING THE CLOUD POINT OF A DIESEL OIL

Dominque Laurent; Gerard Fortunato, both of Lyons; Bernard Damin, Oullins, and Marcel Napoleon, St Verges Mepieu Montalieu Vercieu, all of France, assignors to Elf France, Paris, France

Filed Jun. 7, 1985, Ser. No. 742,580

Claims priority, application France, Jun. 12, 1984, 84 9127

Int. Cl.[5] G01N *33/28*

U.S. Cl. 356—70 **4 Claims**

1. A device for determining a cloud point comprising:

a directed light course having an optical axis;

a diaphragm having a central hole aligned on the optical axis of the light source;

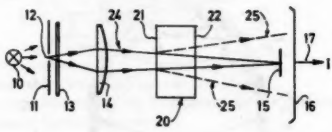
lens means to focus a light beam emitted by the light source and delimited by the diaphragm onto a light-trapping means centered on the optical axis and having a predetermined cross-section sufficiently large to capture the entire focussed light beam;

a light filter interposed between the diaphragm and the lens means;

a test cell to receive diesel oil therein and wherein the test cell is defined by a chamber delimited by two opposite, parallel, planar, transparent walls disposed perpendicular to the optical axis of the light source;

each of said walls comprising a planar window element of transparent material, the cell being provided with an inlet conduit and an outlet conduit for the diesel oil;

photo-electric light-detecting means disposed downstream from the light-trapping means, with reference to the direction of propagation of the light beam, and having a light receiving zone of a size substantially larger than the cross section of the light trapping means, said photo-electric



means being adapted to emit a signal when receiving scattered light which is not trapped by the light-trapping means; and

means for adjusting the temperature of the diesel oil in the cell comprised of thermo-electric sensors for measuring the temperature of the diesel oil and the temperature of the material delimiting the cell, and Peltier elements equipped with radiators adapted to receive a flow of heat-exchange fluid and

means of adjusting the temperature of the diesel oil in the cell, whereby the temperature of the diesel oil is adjusted at the instant when the photo-electric means receiving such scattered light represents the cloud point of the diesel oil in the cell.

5,007,734

APPARATUS FOR MEASURING THE REFRACTION CHARACTERISTICS OF OPHTHAMOLOGICAL LENSES

Karl-Heinz Wilms, Hans-Bierling-Str. 47, D-8089 Emmering, Fed. Rep. of Germany

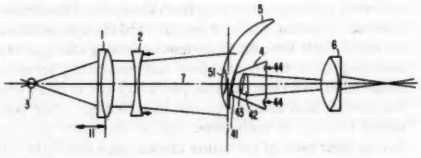
PCT No. PCT/DE87/00385, § 371 Date Apr. 29, 1988, § 102(e) Date Apr. 29, 1988, PCT Pub. No. WO88/01735, PCT Pub. Date Mar. 10, 1988

PCT Filed Aug. 30, 1987, Ser. No. 192,517

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1986, 3629676

Int. Cl.[5] G01M *11/02*

U.S. Cl. 356—124 **11 Claims**



1. An apparatus for measuring the refraction characteristics of ophthalmological lenses comprising a projection optic for projecting light of a light source via a field aperture and the ophthalmological lens arranged on a lens support means onto a light reception means, the refraction characteristics of the ophthalmological lens being determined from an image site in at least one direction, means for varying the vergency of the light beam on the object side of the ophthalmological lens between a position in which the refraction characteristics for the object distance are determined infinitely and at least one alterable position in which the refraction characteristics are

determined for finite object distances, the lens support means being arranged stationary and enabling the ophthalmological lens to be definedly raised and positioned diagonally in the beam path, and compensation means for the diagonally arranged opthalmological lens for enabling adjustment to a specific dioptric measuring range being arranged for disposition in the beam path.

5,007,735

METHOD OF CHARACTERIZING BISTABLE SEMICONDUCTOR LASERS

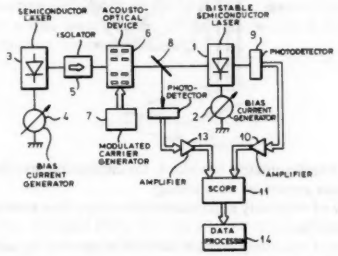
Riccardo Calvani, Pino Torinese, and Renato Caponi, Turin, both of Italy, assignors to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Apr. 13, 1989, Ser. No. 337,383

Claims priority, application Italy, May 24, 1988, 67475 A/88

Int. Cl.[5] G01N *21/41;* H01S *3/30*

U.S. Cl. 356—128 **9 Claims**



1. A method of measuring characteristic parameters of a bistably operating semiconductor laser which comprises the steps of:

(a) biasing said bistably operating semiconductor laser with a current causing said bistably operating semiconductor laser to function as a laser amplifier;

(b) generating an optical pump signal by modulating a light beam emitted by a pumping semiconductor laser at a pumping wavelength exceeding an operating wavelength of said bistably operating semiconductor laser and energizing said bistably operating semiconductor laser with said pump signal to cause bistably operating semiconductor laser to operate in a bistable operating condition;

(c) measuring an output power (I2) of a light beam emitted by said bistably operating semiconductor laser and measuring an input power (I1) of pump signal energizing said bistably operating semiconductor laser;

(d) determining a hysteresis loop formed as a relationship of said output power (I2) to said input power (I1) having switching points (P1, P2) between two stable states of said bistably operating semiconductor laser;

(e) memorizing values of said input and output powers of each of said points; and

(f) computing from memorized values of said input and output powers of at least one of said points a value (n2) of a nonlinear coefficient of refractive index of material constituting said bistably operating semiconductor laser.

5,007,736

SYSTEM FOR TARGET DESIGNATION BY LASER

Jean-Pierre Daniel, and Jean-Pierre Fauchard, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 14, 1979, Ser. No. 22,116

Claims priority, application France, Feb. 14, 1978, 78 04092

Int. Cl.[5] G01B *11/26;* G01C *1/00;* F41G *7/00;* G01N *1/20*

U.S. Cl. 356—152 **8 Claims**

1. An airborne target-designation system installed partly on an aircraft and partly on a pod carried by said aircraft, comprising:

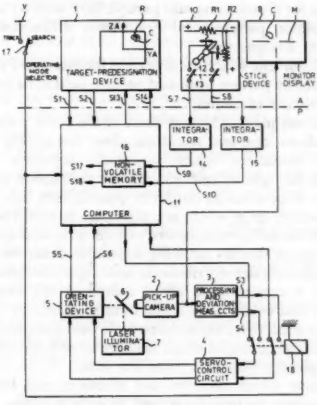
target-predesignation means aboard the aircraft for generating a first set of off-aim signals representing angular deviations of a first line of sight from a first reference direction based upon the structure of the aircraft;

monitoring display means aboard the aircraft;

automatic acquisition equipment in the pod including a laser illuminator and a pick-up camera trained upon a common second line of sight, said camera feeding video signals to said display means for producing thereon an image of a target lying on said second line of sight, said equipment further including orientation means controlled by first servo circuitry and operatively linked with optical means in line with said camera and said illuminator for keeping said second line of sight trained upon the target in response to said first set of off-aim signals in a search mode and in response to said video signals in a tracking mode, said orientation means generating a second set of off-aim signals representing angular deviations of said second line of sight from a predetermined second reference direction based upon the structure of the pod;

selector means for establishing either one of said modes; and

alignment means for correlating said lines of sight with each other, said alignment means including pilot-operated means aboard the aircraft for generating corrective signals upon observation of an offset of the target image from a



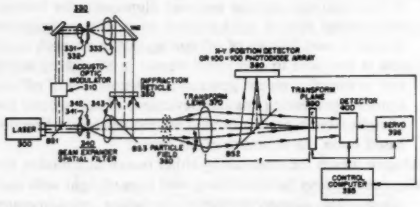
reference point on said monitoring means, processing means switchable by said selector means to receive said first set of off-aim signals from said target-predesignation means and to translate same into error signals fed to said first servo circuitry in said search mode to slave said second line of sight to said first line of sight, said processing means being switchable by said selector means to receive said second set of off-aim signals from said orientation means and to translate same into instruction signals fed to second servo circuitry in said target-predesignation means in said tracking mode to slave said first line of sight to said second line of sight, and a connection extending from said pilot-operated means to said processing means for supplying said corrective signals thereto, said processing means vectorially combining the received set of off-aim signals with said corrective signals to produce said error signals in said search mode and said instruction signals in said tracking mode, said connection including a non-volatile memory for storing said corrective signals and switch means operable to disconnect said memory from said pilot-operated means upon mutual alignment of said lines of sight whereby the corrective signals thereafter supplied to said processing means have the value required to achieve said mutual alignment.

5,007,737

PROGRAMMABLE DETECTOR CONFIGURATION FOR FRAUNHOFER DIFFRACTION PARTICLE SIZING INSTRUMENTS

Edwin D. Hirleman, Jr., Mesa, Ariz., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 1, 1988, Ser. No. 266,952
Int. Cl.[5] G01N *15/02*
U.S. Cl. 356—336 8 Claims



1. A particle sizing system for determining particle size distributions in liquids and gases in a particle field using Fraunhofer diffraction patterns, said particle sizing system comprising:

a means for illuminating said particle field with a Fraunhofer diffraction pattern, said Fraunhofer diffraction pattern having a center axis;

a transform lens which receives and focuses said Fraunhofer diffraction pattern from said particle field at its focal point to produce an output;

a transform plane which is fixed at the focal point of said transform lens, said transform plane comprising a spatial light modulator which physically separates different bands of light of said Fraunhofer diffraction pattern in order to produce an output by passing only light through concentric rings which are adjustable in radius and width about the diffraction pattern's center axis, said spatial light modulator thereby allowing adjustable detection of selective particle size distributions since light scattered by very large is concentrated about comparatively small angles from said center axis, while light scattered by comparatively small particles in the particle field goes into comparatively large angles about said center axis of said diffraction pattern from said transform lens;

a detector which receives and measures said Fraunhofer diffraction pattern from said transform plane at increments that are adjusted by said spatial light modulator to indicate thereby said particle size distribution by detecting magnitudes of discrete angular distributions of scattered light in said Fraunhofer diffraction pattern from said transform plane;

an on-line test means which tests said particle sizing system using a particle field sample with a known particle size distribution which is compared to detected particle size distributions measured by said detector, said particle field sample comprising a diffraction reticle which includes a transparent sheet with a particle array of circular apertures with said known particle size distribution;

a means for detecting the center axis of said Fraunhofer diffraction pattern from said transform plane, said detecting means outputting a detection signal; and

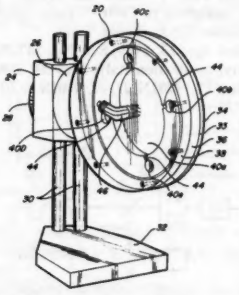
a means for controlling said spatial light modulator and said detector, said controlling means receiving said detection signal from said detecting means, and physically moving said detector so that it is aligned with the center axis of said Fraunhofer diffraction pattern from said transform lens, said controlling means also adjusting said spatial light modulator to pass only light through concentric rings which are incrementally adjusted in radius and width about said center axis of said Fraunhofer diffraction pattern, said controlling means also receiving and displaying measurements made by said detector to indicate thereby said particle size distribution in said particle field.

5,007,738

INTERFEROMETRIC TEST STANDARD

Ralph M. Grant, 4480 Sheldon Rd., Rochester, Mich. 48308-1006

Filed Mar. 14, 1990, Ser. No. 493,218
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—347 28 Claims



1. An interferometric test block, for calibrating interferometric analysis apparatus comprising:

a body of relatively rigid material having a first substantially planar face;

a sheet of relatively flexible material supported by said body and bonded to said face; and

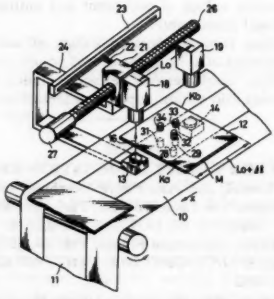
means defining a cavity in said body, said cavity operable to weaken the support provided for the sheet by the body at that portion of said sheet overlying said cavity, so that when a predetermined deforming force is imposed on said test block, said overlying portion of sheet will deform, whereby interferometric measurements of said sheet before and after the imposition of said deforming force may be compared with a predetermined standard to calibrate said interferometric analysis apparatus.

5,007,739

LENGTH MEASURING APPARATUS

Masami Shimano, and Atuhiro Sano, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 24, 1989, Ser. No. 432,918
Claims priority, application Japan, Oct. 24, 1988, 63-267675
Int. Cl.[5] G01B *11/04*
U.S. Cl. 356—383 6 Claims



1. A measuring apparatus for measuring the actual length of a sheet moving at a constant speed in one direction, said apparatus comprising:

front edge detecting means for detecting the front edge of said sheet and for outputting a front edge signal;

rear edge detecting means disposed at a distance substantially equal to a desired sheet length from said front edge detecting means in said one direction for detecting the rear edge of said sheet and for outputting a rear edge signal;

inclination detecting means for detecting the angle of inclination of said sheet with respect to said one direction and for outputting an angle signal representative of said inclination angle;

said inclination detecting means comprising three sets of photosensors arranged at the apices of an isosceles triangle of which a perpendicular bisector of the base is parallel to said one direction and passes through the apex remote from the base; and

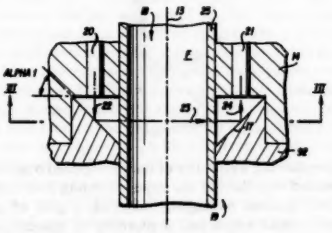
arithmetic means for determining an apparent length of said sheet in said one direction based on said front and rear edge signals output from said front edge and rear edge detecting means and for correcting said apparent length to said actual length based on said angle signal from said inclination detecting means.

5,007,740

OPTICAL PROBE FOR FLUID LIGHT TRANSMISSION PROPERTIES

Anthony C. Jeannotte, and Anthony C. Gilby, both of Foxboro, Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Mar. 30, 1989, Ser. No. 330,533
Int. Cl.[5] G01N *21/00, 1/10*
U.S. Cl. 356—436 **45 Claims**



1. In an optical sensing system including a source of radiant energy and an optical detector, a probe for optical sampling comprising:

(a) a chamber having an optical entry and an optical exit and a fluid port,

(b) means for directing radiant energy from said source into and through said chamber to an exit;

(c) means for collecting said radiant energy exiting from said chamber;

(d) first pathway means for conveying radiant energy to said means for directing radiant energy through said chamber; and

(e) second pathway means for conveying radiant energy away from said chamber exit to said detector,

(f) means for sealing said fluid port and providing thereby a stilling well;

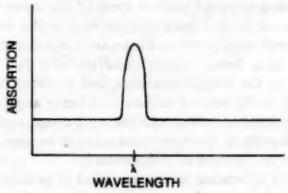
wherein said means for directing radiant energy into and through said chamber to said exit and said means for collecting radiant energy comprise surface portions of an interior conical reflecting surface.

5,007,741

METHODS AND APPARATUS FOR DETECTING IMPURITIES IN SEMICONDUCTORS

Gary E. Carver, Flemington, N.J.; Gregory L. Koos, Yardley, and John D. Michalski, Furlong, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 25, 1989, Ser. No. 412,043
Int. Cl.[5] G01N *21/55*
U.S. Cl. 356—448 **8 Claims**



1. A method for detecting and measuring a specific impurity which is not a conductivity-determining impurity in a crystalline semiconductor wafer comprising the steps of:

forming a light beam containing an optical frequency capable of being absorbed by the specific impurity;

polarizing the beam such that it contains light predominantly of a p-type polarization;

splitting the beam into first and second light components;

directing the first light component at a first semiconductor wafer containing an unknown density of the specific impurity;

directing the second light component at a second semiconductor wafer containing a known density of the specific impurity;

the first and second light components being respectively directed at the first and second wafers at an angle of incidence substantially equal to the principal angle of incidence;

detecting p-type polarized light of the first light component reflected from the first water;

detecting p-type polarized light of the second light component reflected from the second wafer;

measuring the difference of intensity of the detected first and second p-type polarized light components;

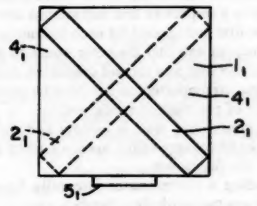
and using the measured intensity difference to determine the density of the specific impurity contained in the first wafer.

5,007,742

TEMPERATURE-SENSING MEMBER

Masayoshi Usui, Numazu, and Hiroshi Kanesaka, Kawasaki, both of Japan, assignors to Usui Kokusai Sangyo Kaisha Limited, Japan

Filed Dec. 19, 1989, Ser. No. 452,820
Claims priority, application Japan, Dec. 27, 1988, 63-330620
Int. Cl.[5] G01K *5/62, 13/00*
U.S. Cl. 374—136 **13 Claims**



1. A temperature-sensing member for directly indicating magnitudes of temperature changes of a fluid, comprising:

a columnar base having a longitudinal axis, opposed ends and an outer surface extending between the opposed ends, the outer surface defining at least first and second opposed surface areas extending longitudinally between the opposed ends, said base being formed from a first material having a coefficient of thermal expansion; and

at least one strip member of a second material having a coefficient of thermal expansion different from that of said base,

said strip member being secured directly on at least the first and second opposed surface areas of the outer surface of said base at acute angles with respect to the longitudinal axis of said base, portions of the strip member on the first surface area being angularly offset in a first direction relative to the longitudinal axis, and portions of the strip member on the second surface area being angularly offset in an opposed direction relative to the axis, such that the opposed ends of the base twist relative to one another in response to changes of temperature;

temperature indicating means mounted in proximity to one said end of the base for providing a direct indication of the magnitude of the temperature change.

5,007,743

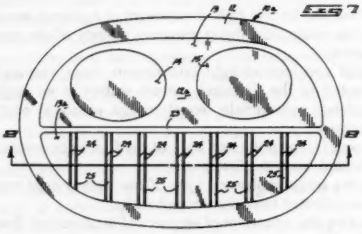
FOOD METERING DISH

Leanne M. Brennan, R.D. #2, Box 475, Drums, Pa. 18222

Filed Nov. 20, 1989, Ser. No. 439,164

Int. Cl.[5] G01K *1/14*; G01F *15/00*

U.S. Cl. 374—141 **1 Claim**



1. A food metering dish including,

a floor and a continuous wall directed upwardly and in surrounding relationship to the floor to define a cavity within the dish, and

a first and second concave recess integrally formed within the floor, and

a first and second container selectively positionable within the first and second respective concave recess to maintain positioning of the first and second container relative to the floor, and

wherein the first and second container each includes measuring gradients formed to the container to enable an individual to ascertain individual portions within the container, and

wherein the first and second container each includes a respective first and second lid, the first and second containers defined by a respective first and second internal diameter, and the first and second lid each including an annular skirt defining an external diameter equal to the internal diameter of the first and second container, and

wherein indicia are imparted on the floor to provide caloric equivalence of preselected foods, and

wherein the continuous wall is hollow and defines a surrounding chamber therewithin in surrounding relationship relative to the floor, and

further including a thermometer integrally formed within the wall in contact with the chamber, and

wherein the chamber is completely filled with a mineral oil which may be heated to an elevated temperature to maintain a predetermined temperature gradient relative to foods contained within the cavity, and

wherein the dish is defined as an ellipse, and the floor is defined as an ellipse, and further including a major partition wall coextensive with and directed across the floor aligned with a major axis defined by the floor, and the first and second concave recess positioned aligned relative to one another on a first side of the major partition, and

wherein a second side of the major partition defines a further cavity between the second side of the major partition and an interior surface of the wall, and further including plural pairs of spaced ribs integrally formed to the floor between the second side of the partition and the interior surface of the wall, and further including partition walls defined by a width substantially equal to a predetermined width between the plural pairs of ribs for selective positioning of the partition walls between the ribs to control food portions contained between the partition walls, and the partition walls defined by a height equal to a predetermined height defined by the major partition wall.

5,007,744

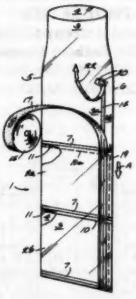
STRIPS OF INTERCONNECTED PRE-OPENED RECLOSABLE BAGS

Paul W. Scarberry, Menomonee Falls; Rodney L. Kazemba, Hartland, and Ralph A. Hestekin, West Bend, all of Wis., assignors to Sharp Packaging, Inc., Sussex, Wis.

Filed Dec. 21, 1989, Ser. No. 454,330

Int. Cl.[5] B65D *30/32, 33/16*

U.S. Cl. 383—37 **8 Claims**



1. In a strip having a plurality of flat pre-opened bags detachably connected together of the type including two layers of heat sealable flexible packaging material, a pair of spaced longitudinal closed edges and a plurality of spaced parallel transverse seals extending between the closed edges and joining the two layers together to define a plurality of bags therebetween, in which each bag in the strip includes (1) a first wall and a second wall consisting of sections of the two layers of the strip, (2) closed margins consisting of sections of the spaced longitudinal closed edges of the strip, (3) an open end along the first wall adjacent a transverse seal, (4) a first line of weakness along the second wall underlying the open end, and (5) a closed margin defined by a transverse seal, the improvement wherein:

each bag in the strip further includes an open zone in the first wall adjacent one closed margin of the bag, an adhesive tape closure adhered to an exterior surface of the first wall surrounding the open zone and adhered to an interior surface of the second wall within the open zone, and a second line of weakness defined in the first and second walls of the bag between the adhesive tape closure and said one closed margin of the bag,

whereby a filled bag of the strip is opened by removing sections of the first and second walls along the second line of weakness and peeling the walls apart along the adhesive

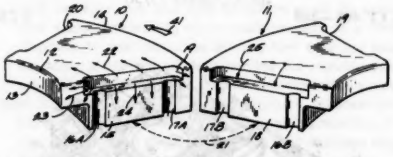
tape closure within the open zone and reclosed by resealing the adhesive tape closure to the second wall within the open zone.

5,007,745

LOW FLOW TILTING PAD THRUST BEARING

James H. Ball, New Berlin, and Willis W. Gardner, Waukesha, both of Wis., assignors to Delaware Capital Formation, Inc., Wilmington, Del.

Filed Sep. 26, 1989, Ser. No. 412,503
Int. Cl.[5] F16C *17/04*
U.S. Cl. 384—307 8 Claims



1. A tilting pad thrust bearing for a shaft comprising:

retainer means including radially spaced apart generally circular inner and outer concentric wall members and a closure member spanning between the wall members to define an annular chamber, concentric to an axis,

a plurality of bearing pads constituting segments of a ring for being arranged circumferentially adjacent each other in said annular chamber about said axis, each pad having a thrust bearing surface for interfacing relatively rotationally with a planar collar on said shaft which collar is transverse to said axis, each pad having an inner end radially spaced from said axis and an outer end more radially remotely spaced from said axis, said pads having radially extending opposite edges that are leading and trailing in respect to the direction of relative rotation,

each pad having formed in its leading and trailing edges of said bearing surfaces, respectively, a groove which has opposite end walls and extends over less than the radial extent of the pad and which is open toward said bearing surface and open toward an edge of the pad so as to form in combination a radially extending pocket in conjunction with a corresponding groove in an adjacent pad,

the leading and trailing edges of each pad containing at least one channel extending axially of the edge and terminating in said groove, the channel in the edge of one pad forming a duct in conjunction with a corresponding channel in an adjacent pad for conducting oil for cooling and lubricating said pads to said pocket, said edges of adjacent pads being spaced from each other by a small amount to create a small gap between them to allow for controlled leakage of oil conducted to the pockets, said pads being tiltable on an axis lying on a radial line to develop a lubricant wedge between said bearing surfaces and collar when there is relative rotation between said pads and collar.

5,007,746

THRUST BEARING WITH RESILIENT RETENTION TANG

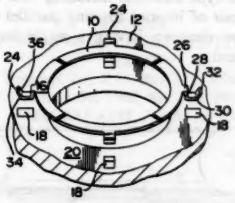
Albert J. Matzelle, Howell, and William E. Scheerer, St. Johns, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Dec. 26, 1989, Ser. No. 457,139
Int. Cl.[5] F16C *17/04, 33/10*
U.S. Cl. 384—420 6 Claims

1. A thrust bearing adapted for positive spring-biased retention within a bearing housing, said bearing comprising;

a bearing body; and

resilient mounting means projecting from said bearing body, said mounting means comprising a pair of resilient spring projections diverging outwardly from a central portion, each one of said pair of spring projections having a free end portion cantilevered about said bearing body, said spring projections each comprising at least one chamfered camming surface for engaging said housing, for deflecting



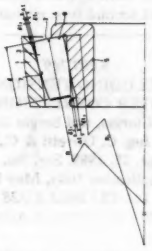
said spring projections, and for forming a spring-biased engagement between said spring projections and said housing.

5,007,747

RADIAL ROLLER BEARING

Masamichi Takeuchi, and Yasuo Asai, both of Osaka, Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed May 22, 1990, Ser. No. 526,883
Claims priority, application Japan, May 22, 1989, 1-58921[U]
Int. Cl.[5] F16C *33/58*
U.S. Cl. 384—450 5 Claims



1. A radial roller bearing comprising:

a inner ring;

a outer ring; and

a plurality of rollers disposed between said rings and a retainer for said rollers;

at least one surface of raceway surfaces of said inner ring, a raceway surface of said outer ring and rolling contact surfaces of said rollers being crowned so that the amount of crowning is 0.0007 to 0.002;

one end surface of each roller being formed spherically convex;

at least one of elements of said inner ring and said outer ring being provided with a rib at its one end opposed to a convex end surface of each roller, said convex end surface of each roller being in contact with said rib, said contact surface of said rib being formed spherically concave in contact with said convex end surface of each roller.

5,007,748

PRINTER FOR BAR CODE USING THIN AND THICK BAR CODE FONTS

Ho C. Lee; John R. O'Toole, both of Endicott; Alex T. Shalkey, and Jack L. Zable, both of Vestal, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 16, 1989, Ser. No. 352,806
Int. Cl.[5] B41J *5/00*
U.S. Cl. 400—103 11 Claims

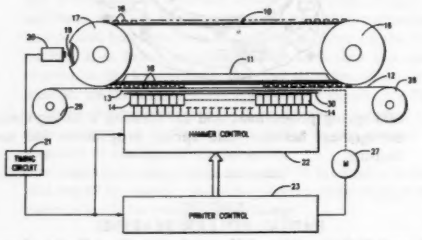
1. An impact printing device for printing bar code patterns on an information carrier, said patterns including a combination of parallel thin and wide bars separated by spaces wherein

said wide bars can have an imprint width which is a multiple of said thin bars, comprising

a movable type carrier,

a plurality of bar code type elements on said type carrier,

said bar code type elements including first type elements having a pair of imprint forming parallel thin bars and second type elements having a single imprint forming thick bar, and



a plurality of print hammer means each defining a print position of a print line and each operable selectively to successively impact combinations of said first and second type elements at the same print position to form completed bar code imprints at said print position having a wide bar imprint with a width greater than said single thick bars of said second type elements.

5,007,749

CARTRIDGE INCLUDING TENSION MEANS FOR A TYPEWRITER CORRECTION RIBBON

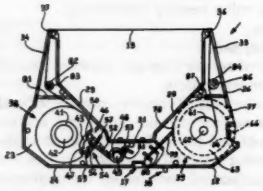
Remo Falconieri, S. Giorgio, and Sergio Uggetti, Ivrea, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Apr. 25, 1989, Ser. No. 343,825

Claims priority, application Italy, May 9, 1988, 67425 A/88

Int. Cl.[5] B41J *35/28*

U.S. Cl. 400—208 **18 Claims**



1. A cartridge for a correction ribbon for typewriters, comprising a container accommodating a supply reel on which said correction ribbon is initially wound and a receiving reel on which said correction ribbon is rewound after having been used, said receiving reel co-operating with a feed mechanism of said typewriter to produce a unidirectional feed movement of said ribbon in each correction cycle and a tensioning device for said supply reel for tensioning said ribbon in opposition to said feed movement said feed mechanism, said tensioning device comprising a toothed ring having a series of peripheral teeth integral with said supply reel, and a spring element having a fixed part bearing against said container and a yielding part having an end engaged with said teeth of said toothed ring to urge said supply reel in a direction opposite to said feed movement of said correction ribbon for tensioning said ribbon, and in which said end of said spring element of being intermittently disengaged from said teeth during said feed movement of said ribbon and being held in engagement with one of said teeth for a given operating travel during which the end of said spring element applies said tensioning action to said supply reel.

5,007,750

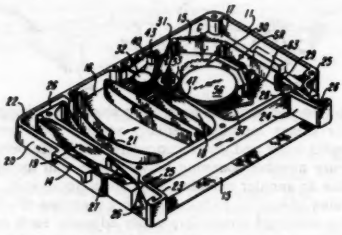
REPLACEABLE INKING CARTRIDGE WITH DEPLETION COUNTER

Donald E. Goubeaux, Miamisburg, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 916,988, Oct. 8, 1986, abandoned, which is a division of Ser. No. 356,077, Mar. 8, 1982, Pat. No. 4,636,097, which is a continuation of Ser. No. 152,058, May 20, 1980, abandoned. This application Oct. 19, 1987, Ser. No. 110,593

Int. Cl.[5] B41J *35/36*

U.S. Cl. 400—249 **1 Claim**



1. A replaceable inking cartridge, comprising: a housing including a cover, the housing defining interior space, the interior space including a stuffing chamber, an endless ink ribbon, a portion of the ink ribbon being confined in the stuffing chamber, another portion of the ink ribbon extending to a zone outside the interior space and adapted to cooperate with printing means, means mounted on the housing for feeding the ink ribbon, a counter disposed within the interior space but outside the stuffing chamber in a location inaccessible for resetting without opening the cover, and means for preventing further operation of the counter when the counter has reached a predetermined count.

5,007,751

PRINTER HAVING CARRIAGE ZEROING DEVICE

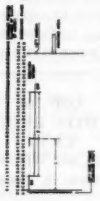
Kiyoshi Yamakawa, Gifu, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Oct. 13, 1988, Ser. No. 256,971

Claims priority, application Japan, Oct. 16, 1987, 62-262507

Int. Cl.[5] B41J *19/30*

U.S. Cl. 400—322 **16 Claims**



1. A printer comprising:

a carriage having a print head mounted thereon and movable along a line of printing;

a stepper motor for moving the carriage;

carriage-position detecting means for detecting arrival of the carriage at a detection point within a range of movement of the carriage;

a carriage stop disposed at one of opposite ends of said range of movement of the carriage, for determining said one end of said range of movement;

first setting means operable upon power application to the printer, for activating said stepper motor to move said carriage in a direction toward said carriage stop until the carriage arrives at said detection point, and further activating the carriage in said direction by a first predetermined number of steps from said detection point such that the stepper motor is activated without displacement thereof with the carriage held in abutting contact with said carriage stop for at least a last one of said first predetermined number of steps, whereby a zero point of the carriage is established for the first time after said power application;

distance detecting means operable after said zero point of the carriage is established, for detecting a distance between said carriage stop and said detection point by activating said stepper motor to move said carriage in a direction opposite to said direction toward said carriage stop and counting a number of steps needed for moving said carriage from said carriage stop to said detection point;

said distance detecting means including a distance memory for storing data indicative of the counted number of steps representing said distance between said carriage stop and said detection point; and

second setting means operable when it is required to establish the zero point of the carriage for a second and subsequent times after said power application, for activating said stepper motor to move the carriage in said direction toward said carriage stop until the carriage arrives at said detection point, and further activating the carriage from said detection point in said direction toward said carriage stop by a sum of said counted number of steps stored in said distance memory and a second predetermined number of additional steps which number is smaller than said first predetermined number, so that the stepper motor is activated without displacement thereof with the carriage held in abutting contact with said carriage stop for at least a last one of the summed number of steps, whereby the zero point of the carriage is established.

5,007,752

PAPER FEED ROLLER ARRANGEMENT FOR PRINTER

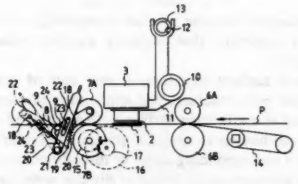
Yoshiyuki Yasumi, and Hiroshi Sato, Iwate, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1989, Ser. No. 388,265

Claims priority, application Japan, Aug. 5, 1988, 63-103745[U]

Int. Cl.[5] B41J *13/03*

U.S. Cl. 400—636 **5 Claims**



1. A paper feed roller arrangement for a printer wherein a print head for printing with an ink ribbon of a ribbon cassette is disposed in an opposing relationship to a platen, said paper feed roller arrangement comprising:

two pairs of paper feed rollers, one of said pairs being disposed adjacent to and on the upstream side of said print head and the other of said pairs of rollers being disposed adjacent to and on the downstream side of said print head when considered with respect to a paper feeding direction, one roller of said downstream pair of feed rollers located in a ribbon cassette installation path; and

means for moving said one roller of said downstream pair of feed rollers toward and away from said print head, wherein a range of motion of said one roller includes a portion outside said path of the ribbon cassette when the ribbon cassette is to be exchanged.

5,007,753

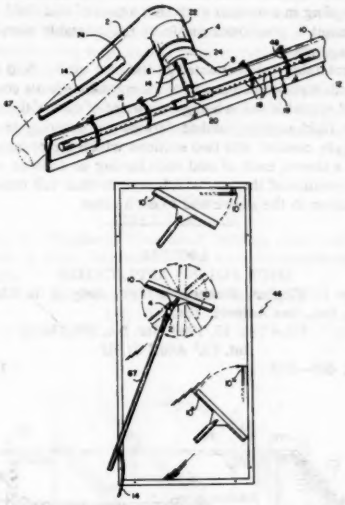
WINDOW CLEANING APPARATUS WITH ROTATABLE HEAD

Raymond B. England, Jr., P.O. Box 511, Albion, N.Y. 14411

Filed Dec. 30, 1988, Ser. No. 295,293

Int. Cl.[5] A47L *13/26, 13/30*

U.S. Cl. 401—139 **4 Claims**



1. Window cleaning apparatus for cleaning a window comprising:

a. a cleaning head;

b. a cleaning element which is attached to the cleaning head;

c. a rotatable sleeve coupling having a closed, flanged end and an open, tubular end, said coupling being comprised of

1. a smaller hollow cylinder having a side wall having an opening therethrough an open end and a closed flanged end formed by collapsing together a part of the cylinder side wall into a flattened surface, said smaller hollow cylinder containing an annular groove disposed on its outer surface in proximity to its open end,

2. a larger hollow cylinder having a side wall with an opening therethrough, two open ends and an annular rim with an opening therethrough, two open ends and an annular rim disposed on its inner surface in proximity to one of its open ends, said rim being rotatably mateable with the annular groove of the smaller cylinder;

the open end of the smaller hollow cylinder being telescopically fitted in to the open end of the larger hollow cylinder which is in proximity to the annular rim so that the annular rim on the inner surface of the large cylinder is rotatably mated with the annular groove on the outer surface of the smaller cylinder;

d. a fastening means which attaches the cleaning head to the closed, flanged end of the rotatable sleeve coupling;

e. a handle which is attached to the open, tubular end of the rotatable sleeve coupling the handle having a bend therein adjacent the rotatable sleeve coupling wherein when the handle is held to extend with a substantial vertical component the cleaning head rotates in a plane parallel to a

substantially vertically oriented window which is being cleaned;

f. a perforated, fluid distribution conduit attached to the outer surface of one of the side walls of the elongated channel forming the cleaning head for distribution fluid onto a window surface;

g. a fluid supply conduit for supplying fluid to the perforated fluid distribution conduit from a fluid source having one of its ends in communication with the perforated fluid distribution conduit and another of its ends in communication with the fluid source, said fluid supply conduit passing through the opening in the side wall of the smaller hollow cylinder and the surface of the rotatable sleeve coupling in a manner such that a part of said fluid supply conduit is positioned inside of the rotatable sleeve coupling; and

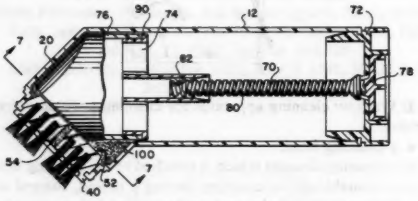
h. a rotatable union situated in the part of the fluid supply conduit positioned inside of the rotatable sleeve coupling, said rotatable union being comprised of two of the ends of the fluid supply conduit formed by severing the fluid supply conduit into two sections which are re-connected by a sleeve, each of said ends having an annular, beaded lip positioned thereon which permits their full rotation in relation to the sleeve and to each other.

5,007,754

SHOE POLISH APPLICATOR

Clarence D. Zierhut, Richardson, Tex., assignor to King Imports, Inc., San Antonio, Tex.

Filed Feb. 13, 1989, Ser. No. 309,376
Int. Cl.[5] A46B *11/02*
U.S. Cl. 401—174 **1 Claim**



1. A shoe polish applicator, comprising:

a hollow body having a plurality of internal walls defining a reservoir for shoe polish, said internal walls comprising a rearward internal side wall having elliptical cross-sections about a rearward axis and a forward internal side wall having circular cross-sections about a forward axis, said rearward and forward internal side walls being joined at a shoulder;

said rearward and forward axes intersecting at an obtuse included angle;

a planar forward internal end wall of said body joined to said forward internal side wall and being perpendicular to said forward axis;

extruder means for extruding said shoe polish from an opening in said forward internal end wall;

said extruder means including a plunger constrained for movement within said body and translation means for translating said plunger within said body;

said plunger including an external side wall elliptical about a plunger axis coaxial with said rearward axis of said body and spaced closely with said rearward internal side wall, a first external front wall partially cylindrical about said forward axis of said body and joined to said plunger side wall, and a second external front wall being planar and parallel to said forward end wall, said first and second external front walls being closely spaced to said forward internal side and end walls, respectively, when said plunger is translated to a forward-most position by way of said means for translation;

brushes extending from a surface about said opening in said forward internal end wall, said forward internal end wall being planar and having a circular perimeter, with said opening being centrally located in said forward internal end wall; and

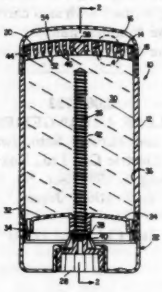
a removable cap for covering said opening and brushes fixed to the hollow body, said cap including a stopper integral with the cap and extending from an internal surface thereof to seal the opening when the cap is fixed to the hollow body.

5,007,755

COSMETIC PRODUCT

Harold R. Thompson, Norwell, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Oct. 5, 1989, Ser. No. 417,260
Int. Cl.[5] A45D *40/06, 40/08*
U.S. Cl. 401—175 **21 Claims**



1. A packaged cosmetic product comprising

container structure that includes annular chamber wall structure,

application surface structure at one end of said annular chamber wall structure, said application surface structure defining an application surface with an array of dispensing ports and having an array of elongated divider webs that define a corresponding array of directly connected distribution passages, said elongated divider webs having body portions, leading end surface portions of width less than said distribution passages to define flared entrance ports to said distribution passages, and relieved trailing end portions to define dispensing ports of cross-sectional areas greater than the minimum cross-sectional areas of the corresponding distribution passages at said application surface,

gel cosmetic material of less than 200,000 centipoises viscosity in said container structure, and

dispenser structure for urging said gel cosmetic material through said distribution passages and said corresponding directly connected dispensing ports to said application surface.

5,007,756

BALLPOINT PEN WITH CONDOM

Remo C. Wey, 31; Rue pres Guetins, CH-2520 La Neuveville, Switzerland

PCT No. PCT/CH88/00045, § 371 Date Oct. 5, 1988, § 102(e) Date Oct. 5, 1988, PCT Pub. No. WO88/06534, PCT Pub. Date Sep. 7, 1988

PCT Filed Feb. 25, 1988, Ser. No. 278,947

Claims priority, application Switzerland, Feb. 25, 1987, 007051/87

Int. Cl.[5] B43K *29/00*

U.S. Cl. 401—195 1 Claim

1. A ballpoint pen with a discreetly packed condom comprising a non-retractable writing head part connected to a cylindrical shell, the writing head part having a writing point connected to a filler containing writing fluid, wherein the cylindrical shell consists of individual cylindrical shells each being open at both ends, each of said cylindrical shells accommodating one condom, said cylindrical shells being threadably connectable with one another and threadably connectable with said writing head part, and the cylindrical shells having means for removing a condom.

5,007,757

LIQUID CONTAINER

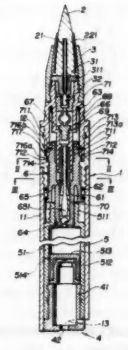
Shigeo Iizuka, Funabashi, Japan, assignor to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1989, Ser. No. 400,884

Claims priority, application Japan, Sep. 2, 1988, 63-115833[U]; Sep. 8, 1988, 63-118257[U]

Int. Cl.[5] A45D *34/04*

U.S. Cl. 401—278 9 Claims



1. A liquid container comprising:

a shaft;

a fixed cylinder including a discharge valve and provided on an upper end of the shaft;

a liquid supply means provided on an upper end of said fixed cylinder;

a liquid receiving means provided in the shaft and slidable with respect to the shaft;

a movable cylinder including a suction valve, said movable cylinder being fitted in an upper end of the liquid receiving means and being slidable with respect to said fixed cylinder;

springs for rearwardly biasing the movable cylinder;

said fixed cylinder being rotatable with respect to the shaft, a rearwardly-directed abutting step portion being formed on the fixed cylinder, an abutting portion abutted with said abutting step portion being provided on the movable cylinder, and

a push button provided at a lower end of the shaft, a stroke length of the push button being selectively adjustable by rotation of said fixed cylinder with respect to said movable cylinder.

5,007,758

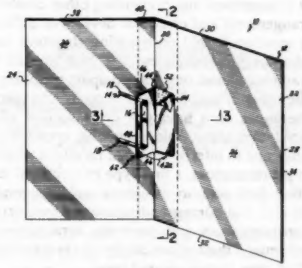
FILE FOLDER

Murray B. Blumberg, Woodmead Springs, South Africa, assignor to Press Engineering Pty. Ltd., Johannesburg, South Africa

Filed Jan. 3, 1990, Ser. No. 460,506

Int. Cl.[5] B42F *13/00*

U.S. Cl. 402—75 12 Claims



1. In combination, a folder and a fastener for securing loose papers to the folder,

said folder having a first panel with first and second opposed faces and first and second opposed parallel side edges,

a cover strip,

said fastener comprising an elongate strip of sheet material, said fastener having a central body portion and a pair of opposed prongs extending from opposite ends of the central body portion,

said first panel having an internal flap formed from material of said first panel and being defined by a parting line that terminates at spaced first and second ends and a hinge line extending between said first and second ends, said flap being pivotal about said hinge line between a first position in which it is flush with said panel and a second position in which it projects upwardly from said first face of said panel thereby to define an opening in said panel,

said cover strip being secured to said panel on said second face of said panel, said cover strip being larger than said opening and overlying said opening, and

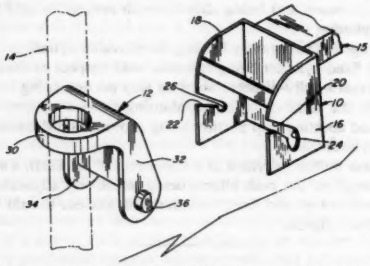
said folder further having securing means adapted to secure the flap to the cover strip with said body portion of said fastener sandwiched between said flap and said cover strip and with said prongs extending upwardly from said first face of said first panel.

5,007,759

ARRANGEMENT FOR ASSOCIATING AN ELECTRICAL DEVICE WITH A MOUNTING THEREFOR

Henry W. Scherer, Mt. Prospect, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Nov. 7, 1988, Ser. No. 267,584
Int. Cl.[5] B25G *3/00*
U.S. Cl. 403—13 19 Claims



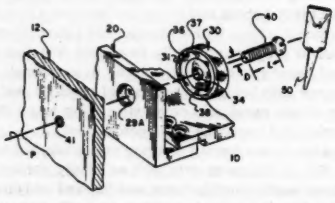
1. A system for preventing different types of electrical devices from being associated with inappropriate mountings, the electrical device including a fitting, the mounting including a support arrangement, the fitting and the support arrangement including cooperating support structure to support the electrical device with respect to the support arrangement, said cooperating support structure including predetermined different dimensions for each different type of electrical device and corresponding support arrangement such that each type of electrical device can be associated only with the corresponding support arrangement and preventing other combinations of support arrangements and electrical devices of different types from being associated, said cooperating structure comprising two spaced-apart protuberances on a first of said fitting or support arrangement and two spaced-apart receiving arrangements on the other of said fitting or support arrangement, said two protuberances each having a cross section of different predetermined dimension, said receiving arrangements each being dimensioned to interfit with and receive a respective one of said two protuberances, a first type of electrical device and corresponding first support structure and a second type of electrical device and corresponding second support structure including protuberances and receiving arrangements of the same predetermined dimensions but being reversed left to right from said first type to second type.

5,007,760

DEVICE FOR ALIGNING AND MOUNTING A COPIER OR PRINTER SUBSYSTEM

Charles E. Mullen, Spencerport, and Arthur H. Crater, Warsaw, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 225,498, Jul. 28, 1988, abandoned. This application Jan. 12, 1990, Ser. No. 464,274
Int. Cl.[5] F16B *43/00*
U.S. Cl. 403—13 6 Claims



1. A device for aligning by precisely marking the trial and error achieved aligned position of, and then fastening in such position, a subsystem, of an electrostatographic copier or printer, including a mounting portion having a first alignment and screw mounting aperture therein substantially larger than a major diameter of a mounting screw being used for fastening such subsystem to a support frame, after such trial and error aligning thereof, such that the subsystem can thereafter be removed from the copier or printer, serviced, and then reinstalled in such precise aligned position therein without further need of such initial trial and error alignment thereof, the device comprising:

(a) a solid member having first and second ends, a front side, and a back side suitable for moving over, and placing tightly, against the mounting portion of such subsystem;

(b) a second screw mounting aperture formed in said first end from said front side clear through to said back side for aligning and mounting or fastening the subsystem therethrough, said second screw mounting aperture being substantially smaller than said first screw mounting aperture in said mounting portion for substantially narrowing and precisely marking an aligned position through said first and larger aperture, and said second screw mounting aperture being substantially the same size as the major diameter of the mounting screw being used for mounting such subsystem therethrough to the support frame;

(c) a recess formed at one of said ends in said back side for forming a cavity and holding adhesive against such mounting portion of the subsystem; and

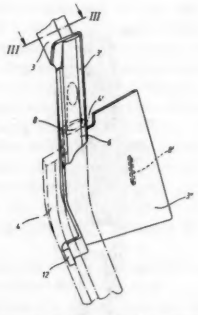
(d) first and second adhesive introduction perforations at said second end formed from said front side clear through into said recess in said back side, for introducing an adhesive therethrough into the cavity formed by said recess against such mounting portion, thereby permanently bonding said aligning device against such mounting portion, and thereby permanently narrowing and marking such precise aligned position through said first and larger aperture such that the subsystem thereafter can be removed with the aligning device bonded thereto, serviced, and reinstalled in precise alignment without further need of such trial and error alignment thereof.

5,007,761

SEAL ARRANGEMENT FOR CONNECTING SEALS

Dietrich Wulff, Aidlingen; Hans-Ludwig Jäger, Böblingen, and Joachim Weisse, Herrenberg, all of Fed. Rep. of Germany, assignors to Daimler-Benz, Fed. Rep. of Germany

Filed Sep. 5, 1989, Ser. No. 402,536
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1988, 3829968
Int. Cl.[5] B25G *3/00;* F10D *1/00*
U.S. Cl. 403—287 7 Claims



1. Sealing arrangement for connecting two seals with different seal profiles comprising:

a transition connection means, which is arranged between

respective end regions of the two seals for connection to the two seals;

the transition connection means is fixedly connected to a first of the two seals and releasably connected to the second of the two seals;

said connection means having a sleeve-shaped seal receiving portion designed as a sealing surface and an accurately fitting lug;

said second of the two seals being releasably inserted into said receiving portion provided on the transition connection means; and

wherein the lug engages in an accurately fitting recess in the second of said two seals when the said second of the two seals is so inserted.

5,007,762

RELEASABLE LOCKING MECHANISM

John A. Duran, Glendora, Calif., assignor to Avibank Mfg., Inc., Burbank, Calif.

Filed Jan. 9, 1990, Ser. No. 463,381
Int. Cl.[5] F16D *1/10*
U.S. Cl. 403—341 **31 Claims**

1. A locking mechanism comprising:

a first connecting member having a cavity with a bottom wall therein for receiving one end of a second connecting member therein;

a second connecting member having a terminal end receivable in said cavity and generally conforming to the configuration of said cavity, said terminal end having a bottom wall generally conforming to the bottom wall of said cavity so that said terminal end bottoms out in said cavity thereby preventing lateral movement of said first and second connecting members, said second connecting member having a locking sleeve with an inner wall axially slidable thereon normally held in a position away from said terminal end by means of a spring biased detent on said connecting member disposed in a groove on the inner wall of said sleeve, and first releasable locking sleeve means associated with said second connecting member and said locking sleeve for releasing said locking sleeve and allowing the same to be slid to a position overlying said terminal end thereby retaining said terminal end in said cavity when said terminal end is disposed in said cavity.

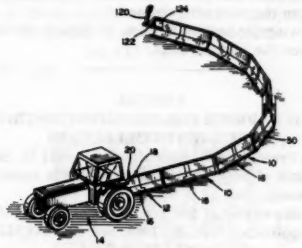
5,007,763

TRAFFIC BARRIERS WITH BUILT-IN CARRIERS

William B. Burgett, Rte. #3, Lost Run Rd., Fredericktown, Ohio 43019

Filed Feb. 1, 1990, Ser. No. 473,643
Int. Cl.[5] E01F *13/00*
U.S. Cl. 404—6 **14 Claims**

1. In combination, a plurality of rigid, non-articulated elongate traffic barrier sections, each of said traffic barrier sections having connecting means at ends thereof for pivotally connecting the barrier sections in end-to-end relationship, each of said traffic barrier sections having a traffic barrier carrier built in at a central portion of the section between the ends of the section to aid in raising the section for transportation from one location to another, each of said carriers comprising wheel means movably carried by the carrier, and moving means connected to said wheel means for moving said wheel means between an upper position in which said barrier section is supported on a



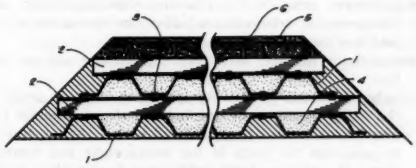
surface and a lower position in which the section is raised above the surface.

5,007,764

INSULATED TRAFFICKED SURFACE

Esko Pontynen, Vesitorninkatu 9 A 9, 05820 Hyvinkaa 2, Finland

PCT No. PCT/FI89/00059, § 371 Date Jan. 24, 1990, § 102(e) Date Jan. 24, 1990, PCT Pub. No. WO89/09853, PCT Pub. Date Oct. 19, 1989
PCT Filed Mar. 30, 1989, Ser. No. 435,523
Int. Cl.[5] E01C *3/06*
U.S. Cl. 404—70 **8 Claims**



1. An insulated trafficked surface comprising:

a first sheet of steel having corrugations;

a second sheet of steel having corrugations, said second sheet of steel being attached perpendicular to and overlying said first sheet, each of said first and second sheets having a plurality of cavities formed between corrugations;

a plurality of fastener rigidly affixing said first and second sheets together;

a heat insulating fill material filling said cavities of said first and second sheets;

a covering layer of aggregate material formed on a top surface of said first and second sheets; and

a surface layer of pavement formed over a top surface of said covering layer.

5,007,765

SEALING METHOD FOR JOINTS

John E. Dietlein, Bay City; Russel P. Kamis, Bay County, and Peggy L. Dixon, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 16, 1988, Ser. No. 245,847
Int. Cl.[5] E01C *11/02*
U.S. Cl. 404—74 **17 Claims**

1. A method of sealing joints between surfaces, said method comprising the steps of

(A) cleaning the facing joint surfaces,

(B) installing a backer rod between the joint surfaces so that the space between the joint surfaces is filled by the backer rod and the upper surface of the backer rod is recessed

sufficiently from the panel surface to allow installation of a sealant, the backer rod being an essentially open cell foam rod having an impervious skin,

(C) applying a sealant in the space over the backer rod between the joint surfaces, and

(D) allowing the sealant to cure, to form a continuous seal between the joint surfaces.

5,007,766

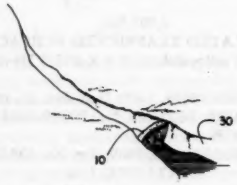
SHAPED BARRIER FOR EROSION CONTROL AND SEDIMENT COLLECTION

W. Wayne Freed, Signal Mountain, and Robert M. Smith, Ooltewah, both of Tenn., assignors to Synthetic Industries, Inc., Chickamauga, Ga.

Continuation-in-part of Ser. No. 383,878, Jul. 21, 1989. This application Nov. 27, 1989, Ser. No. 441,513

Int. Cl.[5] E02B *3/04*

U.S. Cl. 405—24 **11 Claims**



1. An erosion control barrier for placement onto a normally dry watercourse subject to erosion from surface water runoff over the watercourse, comprising:

a structured array of fibers having a predetermined and uninterrupted orientation which spans across the entire width of the watercourse;

means fixing the fiber array in the predetermined orientation;

attachment means operatively associated with the array at the fixing means and extending therefrom, wherein the attachment means has a distal end with a point operative to penetrate the earth in the watercourse and thereby secure the structured array of fibers in fixed relation to the watercourse; and

the fibers having stiffness sufficient to remain substantially upright when the array is thus fixed in a dry watercourse and when surface water is flowing on the watercourse,

so that the structure of fibers reduces the energy of water flowing along the watercourse and thereby causes deposition of sediment carried through the array by the flowing water and also entraps entrained particles of sediment within the fibrous structure.

5,007,767

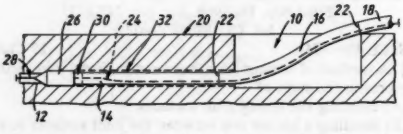
METHOD FOR JOINING POLYOLEFIN PIPES BY FUSION

Trevor G. Stafford, Tyne & Wear, England, assignor to British Gas Corporation, London, England

Continuation of Ser. No. 884,940, Jul. 14, 1986, abandoned. This application Sep. 19, 1988, Ser. No. 246,243

Int. Cl.[5] B65H *69/08*

U.S. Cl. 405—154 **11 Claims**



1. A method for fusion joining, end to end, lengths of pipe liner of the same diameter and wall thickness and made of polyolefin plastic material in which the wall thickness is in the range 2 to 4 millimeters and the ratio of the outside diameter of the pipe liner lengths to wall thickness is at least 40:1, comprising: closing respective aligned circular clamps around lengths of pipe liner adjacent the ends to be joined to reduce non-circularity of the ends, to hold the lengths, and to prevent deformation into oval shape of said ends of said pipe liner under their own weight; trimming the ends to leave trimmed ends more closely adjacent the respective clamps, the trimmed ends being substantially aligned and normal to the lengthwise direction of the lengths; reducing the distance between the clamps to force the trimmed ends against respective opposite faces of a heated body to form initial internal and external beads; reducing the pressure under which the ends engage the body faces; maintaining the ends in engagement with the body faces; separating the clamps to separate the ends from the body; retracting the body; and reducing the distance between the clamps to force the ends into engagement against each other to complete the internal and external beads and to form a strong, fluid-tight fusion joint between said lengths of pipe, the yield strength of said fusion joint being at least equal to the yield strength of the pipe liner wall over a major portion of the angular extent of the pipe liner wall, and being at least 75% of the yield strength of the pipe liner wall over a minor portion of the angular extent thereof, the total time during which the ends from the body and the period between separation of the ends from the body and their engagement against each other being short enough to ensure that the maximum distance which either bead extends away from the adjacent surface of the pipe liner wall is less than half the wall thickness.

5,007,768

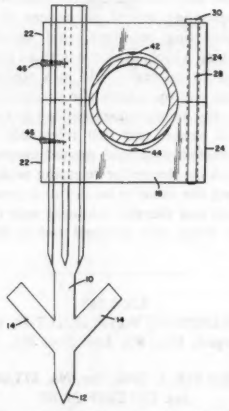
ANCHORING STRUCTURE FOR UNDERGROUND PIPES

George W. Waller, Rte. 13, 190 Strickland Rd., Alpharetta, Ga. 30201

Filed Apr. 17, 1990, Ser. No. 510,181

Int. Cl.[5] F16L *3/00*

U.S. Cl. 405—154 **10 Claims**



1. A pipe anchor for securely anchoring in the ground different diameter pipes, said anchor comprising:

a. a stake body having a longitudinal axis and a non-circular cross section, the stake body including at least one laterally extending wing member to prevent stake movement after the stake body is driven into the ground;

b. first and second clamping members each independently slidably carried on the stake body at axially spaced positions therealong to define a pipe-receiving gap between the clamping members, each clamping member movable

toward and away from the other and having a stake-body-receiving opening corresponding substantially in cross section and size with the cross section and size of the stake body to permit the clamping members to be independently positioned at a desired axial position along the stake body, each clamping member having in a laterally extending edge thereof, relative to the stake body axis, a recess including a plurality of substantially circular arcs to permit the clamping members to engagingly receive within the recesses pipes having different diameters; and

c. attachment means carried by each of the clamping members for securely attaching the clamping members in a desired axial position on the stake body.

5,007,769

METHOD AND DEVICE FOR ATTACHING A REMOVABLE GUIDE POST

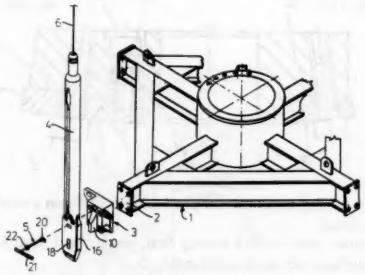
Bernard Legris, Stavanger; Magne Oppedal, Hommersak, both of Norway, and Eric Traonmilin, Billere, France, assignors to Elf Aquitaine Norge A/S, Stavanger, Norway

Continuation of Ser. No. 75,360, Jul. 20, 1987, abandoned. This application Jan. 4, 1989, Ser. No. 293,577

Claims priority, application Norway, Jul. 22, 1986, 86-2945

Int. Cl.[5] E02B *17/00*; E21B *43/10*

U.S. Cl. 405—195 **17 Claims**



1. A method for attaching a removable guide post to a guide base of an offshore hydrocarbon well installation on the floor of a body of water comprising, the steps of,

providing a protrusion extending laterally from a surface on the guide base,

providing a cavity on the guide post for receiving the protrusion of the guide base to connect the guide post to the guide base,

the cavity and protrusion having cooperating surfaces to cause the guide post to move laterally onto the protrusion in response to upward movement of the guidepost,

lowering the guide post with a guide line from a surface station to suspend the guide post in the vicinity of the guide base,

moving the guide post laterally to a position in which a lower surface of the projection is above an upwardly facing surface of the cavity, to generally align the protrusion on the guide base with the cavity of the guide post, and

exerting tension on the guide line to lift the guide post and move the cavity of the guide post into connecting engagement with the protrusion on the guide base.

5,007,770

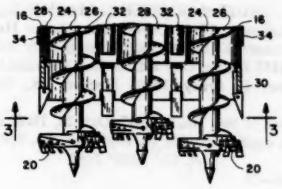
METHOD AND APPARATUS FOR CONSTRUCTING A SUBSURFACE RETAINING WALL

Robert J. Simmons, 27308 Airvfen Ave., Hayward, Calif. 94542, and Key S. Kwak, 419 Beverly Pl., Castro Valley, Calif. 94546

Filed Dec. 4, 1989, Ser. No. 445,373

Int. Cl.[5] E02D *5/56*

U.S. Cl. 405—240 **8 Claims**



1. A method for constructing a subsurface retaining wall from existing grade elevations with a plurality of individual wall elements and without use of forms, shoring or underpinning, the method comprising the steps of:

excavating a first rectilinear hole to a depth defining the desired vertical dimension of the wall to be constructed, the width of said rectilinear hole defining the desired thickness of said wall and the horizontal length of said hole defining the horizontal dimension of an individual wall element

filling said first hole with a suitable first retaining wall element

excavating a second rectilinear hole to a depth defining the desired vertical dimension of the wall to be constructed, said second hole having substantially the same width and length as said first hole, one edge of said second hole being in open communication with the adjacent edge of said first hole and said first retaining wall element, and

filling said second hole with a suitable second retaining wall element.

5,007,771

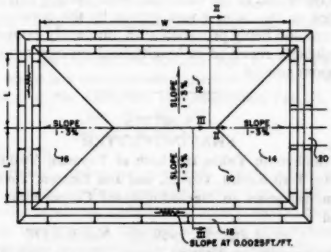
METHOD FOR TREATING CONTAMINATED SOIL BY BIOLOGICAL DEGRADATION ON A SLOPED SURFACE

Jaw K. Fu, Pittsburgh; Arch J. Merritt, deceased, late of Pittsburgh by Helene Merritt, executrix , and John R. Smith, Pittsburgh, all of Pa., assignors to Keystone Environmental Resources, Inc., Monroeville, Pa.

Continuation of Ser. No. 150,536, Feb. 1, 1988, abandoned. This application Feb. 26, 1990, Ser. No. 485,228

Int. Cl.[5] E02D *3/00*

U.S. Cl. 405—258 **10 Claims**



1. A method for treating organically contaminated soil comprising the steps of arranging said contaminated soil in a treatment bed sloping from its interior toward one or more of its edges and having a collecting trench around said edges, applying nutrients to the soil to encourage growth therein of micro-

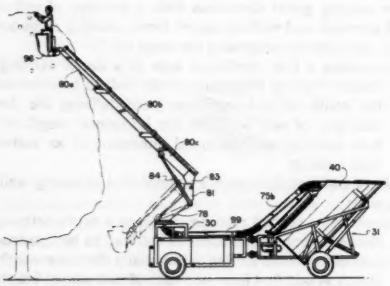
organisms capable of degrading the organic compound contaminants and applying water to said treatment bed on its surface and concurrently withdrawing water through said collecting trench; the shape of the treatment bed and the steepness of its slope being selected to minimize both vertically downward migration of water and water erosion of the shaped treatment bed.

5,007,772

FRUIT HARVESTING MACHINE

Frank J. McKenna, 15914 Chadbourne, Shaker Heights, Ohio 44120; Richard K. Horst, 16201 Burton City Rd.; James F. Horst, 16155 Burton City Rd., both of Orrville, Ohio 44667, and Rodney L. Arney, 15995 Hackett Rd., Dalton, Ohio 44618

Continuation of Ser. No. 261,337, Oct. 24, 1988, abandoned.
This application Jul. 10, 1990, Ser. No. 550,811
Int. Cl.[5] B60P *1/60*
U.S. Cl. 406—39 **10 Claims**



1. In a machine for harvesting fruit from trees including a supporting vehicle, a hopper mounted on the vehicle, an extensible boom having a bottom arm rotatably mounted on the vehicle, a man-supporting bucket on the outer end of the boom, a conduit system extending through said boom and from said boom to the hopper, and means for maintaining sub-atmospheric pressure in said hopper to conduct fruit from the bucket through the conduit system into said hopper, the improvement comprising the boom having inner, middle and outer telescopically slidable boom sections enclosing inner, middle and outer telescopically slidable fruit conduit sections, the boom sections and conduit sections respectively increasing in size from outside to inside, the outer end of the outer conduit section being fixedly mounted to the outer end of the outer boom section, the inner end of the inner conduit section being fixedly mounted to the inner end of the inner boom section, the outer end of the inner conduit section being supported by slidable support means mounted on the inner end of the middle boom section and the outer end of the middle conduit section being slidably supported on the outer boom section by the outer end of the middle conduit being provided with outwardly extending plug means slidably received in longitudinal groove means on the outer boom section.

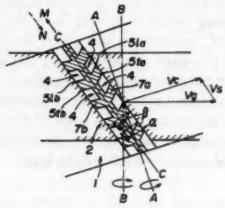
5,007,773

SHAVING CUTTER

Koichi Souketani; Yukio Ito, both of Toyama; Yoshio Sasaki, Toyota; Teiji Kurita, Toyota, and Jun Tamiya, Toyota, all of Japan, assignors to Nachi-Fujikoshi Corporation, Toyama, Japan

Filed Jun. 14, 1989, Ser. No. 366,178
Claims priority, application Japan, Jun. 17, 1988, 63-149539
Int. Cl.[5] B23F *21/00*
U.S. Cl. 407—27 **14 Claims**

1. In a helical toothed shaving cutter for shaving of gears which cutter is provided with a multiplicity of serrations extending on the cutter tooth flanks and including ribs made up by said serrations of said cutter, said ribs forming said cutter tooth flanks, the improvement wherein said ribs are arranged on each side of an axial centerline of each of the cutter teeth



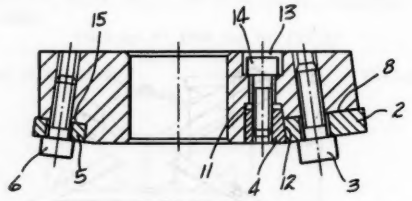
and each of said ribs has a leading cutting edge having a positive rake angle and a trailing cutting edge having a negative rake angle as viewed in the direction of a lateral sliding of the teeth along the tooth trace of said cutter.

5,007,774

CUTTING OR DRAWING TOOL

Roland Kromer, Ettlingen, Fed. Rep. of Germany, assignor to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland

Continuation of Ser. No. 261,688, Oct. 24, 1988, abandoned.
This application Sep. 12, 1990, Ser. No. 581,407
Claims priority, application Switzerland, Dec. 8, 1987, 04784/87
Int. Cl.[5] B23B *29/24, 27/00*
U.S. Cl. 407—94 **11 Claims**



1. A cutting apparatus for producing profiles on a workpiece comprising:

a cutter plate holder having first, second and third bearing surfaces defining a channel;

at least one cutter plate located within said channel and bearing on said first, second and third bearing surfaces;

positioning means located within said cutter plate holder in abutting relationship with said at least one cutter plate for positioning the position of said at least one cutter plate within said channel against said second and third bearing surfaces; and

clamping means for securely clamping said at least one cutter plate in said channel against said first bearing surface at said position.

5,007,775

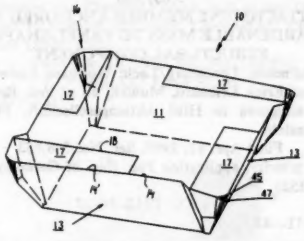
CUTTING INSERT FOR CHIP REMOVING MACHINING

Glenn G. E. Pantzar, Arsunda, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Aug. 29, 1989, Ser. No. 400,066
Claims priority, application Sweden, Sep. 6, 1988, 8803122
Int. Cl.[5] B23C *5/02*
U.S. Cl. 407—113 **20 Claims**

1. A cutting insert for chip cutting machining comprising a body of generally polygonal shape having a chip face, an opposite bottom face and at least one clearance face intersect-

ing said chip face to define a cutting edge which extends to a corner of said body, a portion of said chip face extending along said cutting edge beveled in a direction linearly inclined toward and intersecting said cutting edge and simultaneously toward a midplane of said insert disposed intermediate said chip face and said bottom face such that a first angle of inclination disposed at a first location adjacent said corner and formed by the intersection of said beveled portion and said midplane is larger than a second angle of inclination formed by the intersection of said beveled portion and said midplane at a second location situated farther from said corner than said first location.



5,007,776

CONTROLLER FOR BORING APPARATUS

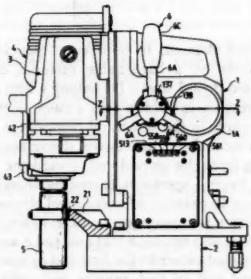
Michihiro Shoji, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd, Japan

Filed Jun. 19, 1990, Ser. No. 540,197

Claims priority, application Japan, Jun. 23, 1989, 1-73942[U]; Jun. 23, 1989, 1-73943 [U]

Int. Cl.[5] B23B *45/14*

U.S. Cl. 408—6 **13 Claims**



1. A controller for a magnetic base drill unit comprising a frame having a magnetic base which magnetically adheres to a workpiece, an electric drill having a drill motor, and a feed motor fixed to the frame for causing the electric drill to advance upon and recede from the workpiece, the controller comprises:

hole cutting termination detection means for detecting the termination of the hole cutting in the workpiece by the electric drill,

feed motor reversing means responsive to the output of the hole cutting termination detection means for reversing the rotational direction of the feed motor, and for applying to the feed motor a voltage which is higher than the voltage applied to the feed motor during the advancing mode of the electric drill, and

safety circuit means for detecting that a voltage higher than a predetermined voltage to be applied to the feed motor in the advancing mode of the electric drill is applied to the feed motor during the advancing mode, and for stopping the supply of power to the drill motor and the feed motor.

5,007,777

HOLE SAW

Noboru Itokazu, 5-33-808, Nankonaka 5-chome,, Suminoe-ku, Osaka-shi, Osaka 559, Japan

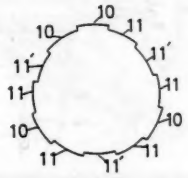
PCT No. PCT/JP87/00992, § 371 Date Aug. 18, 1988, § 102(e) Date Aug. 18, 1988, PCT Pub. No. WO88/04588, PCT Pub. Date Jun. 30, 1988

PCT Filed Dec. 18, 1987, Ser. No. 251,221

Claims priority, application Japan, Dec. 18, 1986, 61-195381[U]; Mar. 25, 1987, 62-44791[U]; Mar. 25, 1987, 62-44792[U]; May 8, 1987, 60-69089[U]; Dec. 23, 1987, 62-162800[U]

Int. Cl.[5] B23B *41/02*

U.S. Cl. 408—67 **23 Claims**



1. A hole saw comprising:

a basal part having a coupling for joining to a rotary power source;

a centering drill operatively mounted along a central axis of said basal part; and

a tubular body having a first end joined to said basal portion and a second end provided with a cutting edge having cutting teeth, said cutting edge comprising a portion thereof having varying cross-sectional contour which locates said cutting teeth at different distances from said central axis, said cutting edge having a plurality of sections having cylindrical cross-sectional contours and a plurality of retreat sections, the retreat sections being provided between the cylindrical sections whereby a contour of said cutting edge alternates between a cylindrical section and a retreat section, the retreat sections having a cylindrical cross-sectional contour generally centered about the central axis, said cylindrical sections also being generally centered about the central axis but having a diameter therefrom which is greater than a diameter from the central axis to the retreat sections, the retreat and cylindrical sections each having a stepped portion therebetween, and each retreat section has a plurality of subsections positioned at varying distances from the central axis and interconnected by stepped portions.

5,007,778

PORTABLE POWER TOOL FOR MILLING TUBE ENDS

Tollief O. Hillestad, 108 9th Ave., W., Summerland Key, Fla. 33042, and Mark W. Hillestad, 220 Hatch Rd., Wadsworth, Ohio 44281

Continuation-in-part of Ser. No. 334,314, Apr. 6, 1989, Pat. No. 4,915,552, which is a continuation-in-part of Ser. No. 254,958, Nov. 7, 1988, Pat. No. 4,889,454. This application Feb. 21, 1990, Ser. No. 482,767

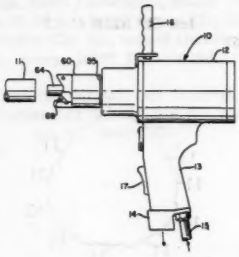
Int. Cl.[5] B23B *45/04*

U.S. Cl. 408—125 **56 Claims**

1. A portable, pneumatic-powered, rotary vane motor adapted to operate a rotary tool, the motor comprising:

a pneumatic-powered, radial-vane rotary motor having a housing containing a cylindrical stator, said cylindrical stator having an inner surface defining a stator chamber, a circular rotor hub operatively supported by the housing and eccentrically set within the cylindrical stator, said motor housing being circular and the axis of the rotor hub being offset from the axis of said circular housing, said rotor hub containing a plurality of circumferentially

spaced, radially directed slots, each slot containing a radially directed vane adapted to extend radially outward to bear against the inner surface of the cylindrical stator during rotary movement of the rotor hub whereby said radially extended vanes define a plurality of expansible cavities within the stator chamber, a sealing point located between said rotor hub and said inner surface of said cylindrical stator whereby said vanes are maximally retracted at said sealing point;



a gas inlet port communicating with the interior of said stator chamber and located circumferentially adjacent to said sealing point between the rotor hub and the inner surface of the cylindrical stator, said gas inlet port adapted to admit gas under pressure to said expansible cavities within the stator chamber; and

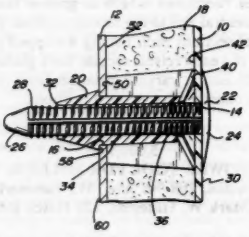
a gas outlet port communicating with stator chamber and located at least 180 circumferential degrees from the gas inlet port, said gas outlet adapted to exhaust spent gas from said expansible cavities.

5,007,779

STANDOFF RETAINER

James L. Goran, Orchard Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 10, 1989, Ser. No. 419,183
Int. Cl.[5] F16B *13/06*
U.S. Cl. 411—48 **19 Claims**



1. A standoff retainer for receiving a push-pin to secure a first panel to a second panel in spaced planar facing relationship with respect thereto, the panels each having an aperture formed therethrough, the standoff retainer comprising:

an elongated body positionable to extend between said panel apertures;

a through bore extending axially through said body between said panel apertures and adapted to receive said push-pin in axially locking relationship;

a mounting flange surrounding said through bore and abuttingly engagable with said first panel;

a plurality of circumferentially spaced standoff ribs extending perpendicularly from said mounting flange and having distal ends abuttingly engagable with said second panel;

snap-fit locking means integrally formed with said body for engaging said second panel aperture in the snap-fit axially fast relationship; and

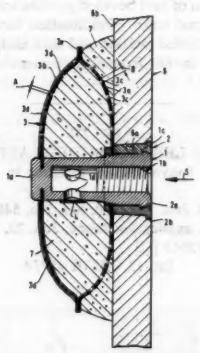
means defining a funnel on the surface of said mounting flange facing said first panel, said funnel surrounding said through bore.

5,007,780

ATTACHMENT MEMBER ANCHORED BY HARDENABLE MASS TO PANEL-SHAPED STRUCTURAL COMPONENT

Armin Hoffmann, Landsberg/Lech; Wolfgang Ludwig, Landsberg, and Erich Leibhard, Munich, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Apr. 12, 1990, Ser. No. 508,953
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1989, 3912526
Int. Cl.[5] F16B *39/02*
U.S. Cl. 411—82 **12 Claims**



1. Attachment elements to be fixed to panel-shaped structural components by a hardenable material comprising an axially elongated dowel sleeve (1) having a first end (1*a*) leading in the direction in which said dowel sleeve is inserted through a borehole in the structural component and an oppositely directed second end, said dowel sleeve having a passageway extending from the second end toward the first end, said dowel sleeve having apertures extending therethrough from said passageway to exterior of said dowel sleeve, load attachment means within said passageway, an annular part encircling said dowel sleeve and having a first end and a second end with the first end located closer to the first end of said dowel sleeve than the second end of said annular part, said annular part arranged to fit closely in the borehole in the structural component through which said dowel sleeve is inserted and a bag-like member arranged to receive the hardenable material and fixed to said dowel sleeve adjacent the first end thereof and to said annular part adjacent the first end thereof, said bag-like member arranged to be inserted through the borehole in the structural component so that in the inserted condition said bag-like member is located on an inner side of the structural component opposite an outer side through which the dowel sleeve is first inserted, said bag-like member having a first side and an oppositely facing second side with said first side facing the inner side of the structural component after said dowel sleeve and annular part are inserted through the borehole in the structural component, said first side of said bag-like member being fixed to said annular part, wherein the improvement comprises that said apertures in said dowel sleeve open into said bag-like member, at least said first side of said bag-like member comprises openings therethrough for permitting excess hardenable material injected into said bag-like member through said dowel sleeve and apertures therein to pass outwardly from said bag-

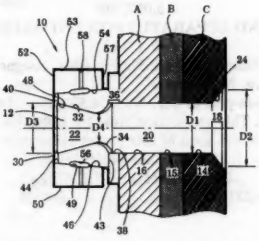
like member, said second side of said bag-like member is connected to said dowel sleeve, and said first and second sides being joined together radially outwardly from said annular part.

5,007,781

TAPERED SPLIT-BUSHING FASTENER

Jack E. Jensen, and Ebrahim Parekh, both of San Diego, Calif., assignors to General Dynamics Corporation, Convair Division, San Diego, Calif.

Filed Sep. 10, 1990, Ser. No. 580,016
Int. Cl.[5] F16B *21/00*
U.S. Cl. 411—337 **6 Claims**



1. A tapered split-bushing fastener comprising:
an elongated smooth pin having a predetermined length, said pin having a front end and a rear end;
in sequence from its front end to its rear end, said pin has a head portion, a shank portion and a rear portion;
said shank portion having an outer diameter D1, said head portion having a diameter D2 that is greater than D1;
said rear end portion having an outer diameter D3 that is no greater than D1 and it tapers axially forwardly from its rear end to a diameter D4 that is less than D1 by a predetermined amount;
a tubular split-bushing having a front end, a rear end, and inner annular surface and an outer annular surface, said bushing being split longitudinally into at least two pieces, said outer annular surface of said tubular split-bushing having a first circumferential annular groove therearound;
said tubular split-bushing being removably engagable around the tapered surface of the rear portion of said pin;
a tubular sleeve having a front end, a rear end and a lateral outer side wall;
said tubular sleeve having a bore hole that extends from its front end to its rear end, said bore hole having a second circumferential annular groove therearound and said bore hole matingly engages the outer annular surface of said split-bushing and said first and second circumferential annular grooves align to forming a closed chamber thereby; and
means for substantially filling said closed chamber with an adhesive for locking said tubular sleeve on said split-bushing so that neither of them can be removed from the rear end portion of said elongated pin.

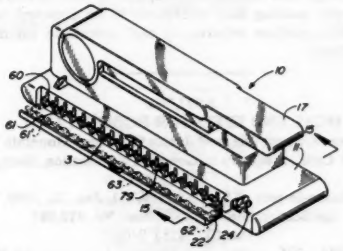
5,007,782

COMBINED PAPER PUNCH AND BINDING APPARATUS

Charles T. Groswith, III, Los Altos; Richard D. Phipps, Morgan Hill; Robert L. Lathrop, Jr.; John F. Stewart, both of San Jose, and Rick J. Kaufmann, Los Gatos, all of Calif., assignors to Taurus Tetraconcepts, Inc., Mountain View, Calif.

Filed Jul. 18, 1989, Ser. No. 381,612
Int. Cl.[5] B42B *9/00*
U.S. Cl. 412—40 **23 Claims**

1. A combined punching and binding apparatus comprising:
a base portion;
a first punch mechanism in said base portion and accessible to a first stack of paper sheets insertable along a first linear edge of said base portion for punching a first hole pattern in the first stack of paper sheets;
a second hole around mechanism in said base portion and accessible to a second stack of paper sheets insertable along a second linear edge of said base portion for punching a second hole pattern in the second stack of paper sheets;
a punch operational crank pivotally connected to said base portion;



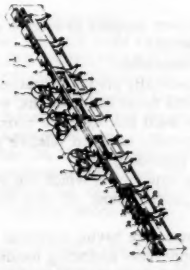
means interconnecting said crank and each of said hole punch mechanisms for independently punching the first and second hole patterns in any stack of paper sheets inserted into said mechanisms at said first and second linear edges, respectively; and
binding means attached to said base portion for binding one of the first or second stacks of sheets.

5,007,783

POSITIONING APPARATUS FOR AN AUTOMATIC CARRIER SYSTEM

Sei Matsuo, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 325,581, Mar. 17, 1989, abandoned. This application Apr. 2, 1990, Ser. No. 503,181
Claims priority, application Japan, Jun. 2, 1988, 63-134373
Int. Cl.[5] B65G *21/20, 67/02*
U.S. Cl. 414—222 **3 Claims**



1. An apparatus for positioning a workpiece relative to an automatic assembling machine comprising:
a carrier disposed adjacent said automatic assembling machine, said carrier supporting a pallet, fixed to said carrier, and a subpallet, slidably mounted on said pallet, said subpallet having means for holding said workpiece, said subpallet also having at least two positioning projections;
a robotic arm disposed on said automatic assembling machine having a positioning member capable of moving into and out of contact with said positioning projections, said positioning member made up of at least two positioning cylinders having tapered openings at one end thereon, said

tapered openings having a smallest diameter at the centers of said positioning cylinders;

wherein, when said carrier is placed such that said workpiece is positioned within a short distance of a desired position relative to said automatic assembling machine, said positioning member can be moved toward said carrier, and said positioning projections on said subpallet are engaged with said tapered openings of said positioning cylinders, said tapered openings causing said positioning projections to move toward the center of said tapered openings, thus causing said subpallet to slide on said pallet, thereby causing said workpiece to be disposed in said desired position relative to said automatic assembling machine.

5,007,784

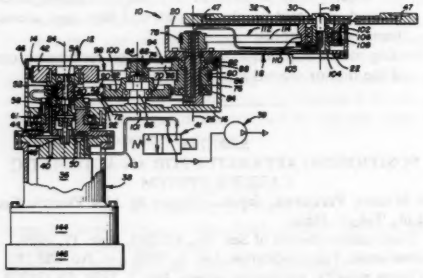
DUAL END EFFECTOR ROBOTIC ARM

Genco Genov, Sunnyvale, and James Cameron, Mountain View, both of Calif., assignors to Genmark Automation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 299,754, Jan. 20, 1989. This application Sep. 20, 1989, Ser. No. 410,087

Int. Cl.[5] B25J *9/06*

U.S. Cl. 414—225 **11 Claims**



4. A workpiece processing apparatus, comprising:

a workpiece holder adapted to hold a plurality of workpieces to be processed;

a work station adapted to hold and process successively held workpieces;

a workpiece receiver adapted to receive successively processed workpieces;

a robotic arm, comprising:

a plurality of sequentially pivotally attached links each having proximal and distal end portions, with the proximal end portion of each link except a proximalmost of said links being pivotally attached relative to the distal end portion of the preceding link;

a relatively static structure to which the proximal end portion of the proximalmost of said links is pivotally mounted;

an end effector structure having a central portion and two substantially oppositely extending hands each capable of picking up a workpiece, said central portion being centrally pivotally mounted to the distal end portion of a distalmost of said links;

said links, end effector structure and static structure being of a construction sufficient to allow said robotic arm to reverse across the pivot axis of said proximal end portion of the proximalmost of said links;

radial drive means for driving said links in a manner such that the pivot axis of said central portion of said end effector structure moves only substantially linearly radially along a line passing through and perpendicular to said pivot axis of said proximal end portion of the proximalmost of said links and to the pivot axis of said central portion of said end effector structure and said end effector structure is maintained at a selected angle to said line; and

rotational drive means for rotating said relatively static structure and with it said links about the pivot axis of said proximal end portion of said proximalmost of said links;

said robotic arm being positioned and of a construction sufficient to remove successive workpieces from said holder using either of said hands, position said workpieces successively at said work station using either of said hands, remove said workpieces successively from said work station using either of said hands and position said workpieces successively in said receiver using either of said hands.

5,007,785

METHOD AND APPARATUS FOR UNLOADING STACKS OF TRAYS

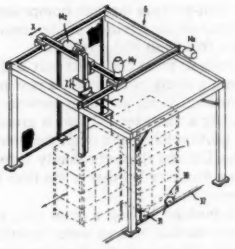
Jelle van der Schoot, Aalten, Netherlands, assignor to Staalkat B. V., Aalten, Netherlands

Continuation-in-part of Ser. No. 270,590, Nov. 14, 1988, Pat. No. 4,917,559. This application Nov. 14, 1989, Ser. No. 435,968

The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.

Int. Cl.[5] B65G *59/02, 67/24*

U.S. Cl. 414—331 **12 Claims**



1. Apparatus for unloading stacks of trays from a movable storage container, comprising:

(1) a storage container having vertically-disposed supports and a plurality of horizontally-disposed sections connecting said supports and forming a plurality of horizontally-disposed shelves which are positioned at different vertical levels of said container for holding on each shelf at least three laterally adjacent stacks of trays, each shelf having a front side and a back side and a centrally located guide strip extending from near the back side to near the front side with the guide strip being substantially parallel to the other two sides of the shelf and having short guide ribs extending from the said other two sides at right angles thereto;

(2) unloading means for unloading a stack of trays from said container and having a configuration such that the unloading means is capable of being inserted under a lowermost tray of the middle stack of said trays of said three adjacent stacks of trays and supporting that middle stack of trays;

(3) unloading moving means for moving said unloading means; and

(4) control means for controlling the movement of the unloading means such that the unloading means is movable:

(a) vertically adjacent said container such as to place said unloading means at the top of a first shelf to be unloaded;

(b) horizontally forward such as to insert said unloading means under said lowermost tray of said middle stack of trays;

(c) vertically to slightly elevate the stack of trays from the shelf;

(d) laterally such as to loosen said middle stack of trays from said adjacent stacks so that the middle stack of

trays is removable without interference from the other stacks of trays of the said three adjacent stacks of trays; and

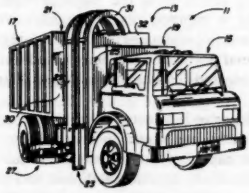
(e) horizontally backwards such as to remove said middle stack of trays from said container.

5,007,786

REFUSE COLLECTION SYSTEM, REFUSE COLLECTION TRUCK AND LOADER ASSEMBLY THEREFOR

John W. Bingman, Mesa, Ariz., assignor to Sunbelt Automated Systems, Inc., Phoenix, Ariz.

Filed Dec. 8, 1988, Ser. No. 281,558
Int. Cl.[5] B65F 3/02
U.S. Cl. 414—409 13 Claims



13. An improved refuse collection system including a refuse truck having a truck cab for housing at least an operator, a truck frame, and a bed carried by said frame, said bed including an elongated bottom, a pair of longitudinal sides, a front end, and a rear tailgate defining a substantially hollow bed interior divided into an open top loading station and a refuse storage portion, said system including a refuse container-loading apparatus comprising:

rail means operatively fixedly mounted to at least one of said truck frame and one side of said bed adjacent said open top loading station at substantially one side of said truck, said rail means including means for forming a first set of wheel channels and a drive chain channel, said rail means including a relatively vertical lower end portion and a partially semicircular arcuately downwardly turned upper end portion extending over said one side of said bed and facing on said open top loading station;

carriage means including wheel means operatively disposed within said set of wheel channels for up and down movement therein and having a down home position and an up dump position;

means operatively carried by said carriage means for retainably engaging and releasing a selected refuse container;

means operatively coupling said carriage means and said engaging and releasing means for extending said engaging and releasing means to a pick-up position a predetermined distance from said one side of said bed and spaced from said rail means for retainably engaging a refuse container to be emptied and releasing an emptied refuse container and retracting said engaging and releasing means to a home position adjacent said one side of said bed for enabling said carriage means to lift and lower same along said rail means for dumping purposes;

a single finite length of sprocket drive chain having first and second end portions which are unconnected from one another housed within said drive chain channel for up and down movement along said rail means;

means for operatively coupling and uncoupling said drive chain to said carriage means;

hydraulic motor means for driving said drive chain up and down said rail means; and

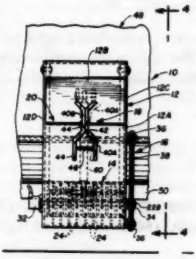
speed control responsive to the actual speed, acceleration and deceleration of said carriage means for automatically controllably adjusting the speed, acceleration and deceleration of said hydraulic motor means for minimizing the time required to lift a refuse can to be emptied, dump the contents thereof into said open top loading station and lower said emptied refuse container to said home position while simultaneously optimizing to dumping efficiency of system.

5,007,787

BAG CLAMPING DEVICE FOR WASTE MATERIAL DEBAGGING APPARATUS

Llewellyn R. Schnader, New Holland, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.

Filed Dec. 26, 1989, Ser. No. 456,707
Int. Cl.[5] B65G 65/34
U.S. Cl. 414—412 6 Claims



1. A material debagging apparatus comprising:

a receptacle defining a chamber for holding bagged material;

means for rupturing a bag disposed in said chamber and at least partially filled with material, said rupturing means being carried on said receptacle;

drive means for operating said rupturing means to cause rupturing of the bag;

means mounted on said receptacle for releasably clamping the bag in order to releasably secure the bag to said receptacle; and

said clamping means including a pair of clamp members positioned side-by-side and normally disposed in a clamping condition for clamping and securing a top end portion of the bag, at least one of said clamp members being yieldably movable relative to said other clamp member to dispose said clamp members in a nonclamping condition for releasing the bag top end portion.

5,007,788

PITCH CHANGING DEVICE FOR CHANGING PITCHES OF PLATE-LIKE OBJECTS AND METHOD OF CHANGING PITCHES

Takanobu Asano, Yokohama; Kenichi Yamaga, and Wataru Ohkase, both of Sagamihara, all of Japan, assignors to Tel Sagami Limited, Kanagawa, Japan

Filed Apr. 24, 1989, Ser. No. 342,345
Claims priority, application Japan, Apr. 25, 1988, 63-103403; May 17, 1988, 63-119580; Jul. 19, 1988, 63-179773
Int. Cl.[5] B65G 65/00
U.S. Cl. 414—417 6 Claims

1. A pitch changing device for changing pitches of semiconductor wafers arranged in parallel to each other, comprising:

means for unloading a plurality of wafers arranged in containing means at predetermined pitches while the pitches are kept unchanged; and

holding means for holding the unloaded wafers while the pitches are depth unchanged,

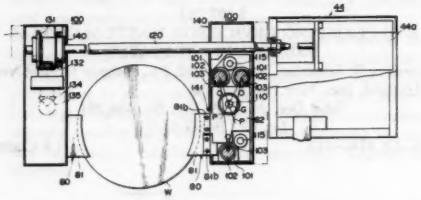
said holding means including,

a plurality of movable members for respectively holding the unloaded wafers,

elastic means, including a plurality of springs, for varying the pitches between the wafers which are held by the movable members, and

driving means, including a drive shaft surrounded by the

springs, flow allowing expansion/contraction of said springs, wherein pitches of the wafers are changed when



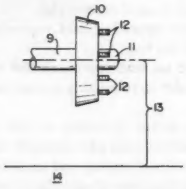
said springs are expanded/contracted by the driving means while the wafers are respectively held by the movable members.

5,007,789

VEHICLE WHEEL MOUNTING APPARATUS

Michael A. Painter, 15401 Stonewood Ter., Sherman Oaks, Calif. 91403

Filed Sep. 29, 1989, Ser. No. 414,661
Int. Cl.[5] B60B *29/00*
U.S. Cl. 414—427 **5 Claims**



1. A vehicle wheel mounting apparatus for mounting a vehicle tire and wheel upon a vehicle axle comprising:

(a) a mounting base having a top and bottom surfaces;

(b) a plurality of wheel assemblies secured to the bottom surface of said mounting base;

(c) a positioning guide secured to the mounting base and extending upwardly from the top surface thereof;

(d) a wheel positioning member comprising an arcuate positioning frame having arcuate top and bottom surfaces and first and second longitudinal edge surfaces, the latter being in parallel spaced relation to each other;

(e) a plurality of equally spaced roller assemblies, each roller assembly including an axle and a cylindrical roller suitably journaled thereabout, each axle being secured between the first and second longitudinal edge surfaces, said roller assemblies being in parallel relation to each other, the cylindrical surface of each of said rollers uniformly extending above the arcuate top surface of said positioning frame, the cylindrical surfaces of said rollers being in contact with and adapted to uniformly support the vehicle tire whereby the tire may be rotated about its axis for alignment with the axle;

(f) guide means for guiding the vertical movement of said wheel positioning member along the positioning guide, said guide means coupled to the first longitudinal edge surface of said positioning frame; and

(g) hoisting means for lifting said wheel positioning member relative to the mounting base, said hoisting means being coupled intermediate the positioning frame and said mounting base.

5,007,790

SUSTAINED-RELEASE ORAL DRUG DOSAGE FORM

John W. Shell, Hillsborough, Calif., assignor to DepoMed Systems, Inc., Hillsborough, Calif.

Filed Apr. 11, 1989, Ser. No. 336,440
Int. Cl.[5] A61K *9/48*
U.S. Cl. 424—451 **9 Claims**

1. A sustained-release oral drug dosage form for releasing a solution of drug into the stomach comprising:

a plurality of solid particles of a solid-state drug dispersed within a hydrophilic, water-swellable polymer that (i) swells via imbibition of gastric fluid to increase the particle size to a level that promotes retention in the stomach over said time period, (ii) permits dissolution of the dispersed drug by imbibed gastric fluid while the drug is within the particle and release of the resulting solution via a leaching action from the particles, thus assuring that drug only in solution reaches contact with the gastric mucosa, and (iii) maintains its physical integrity for at least a substantial portion of the time period during which the drug is released into he stomach and thereafter rapidly dissolves,

wherein said drug is selected from the group consisting of calcium carbonate, cimetidine, ranitidine, indomethacin, ibuprofen, naproxen, prednisone, prednisolone, dexamethasone, piroxicam, aspirin, nifedipine, and potassium chloride,

and wherein said polymer is selected from the group of polymers consisting of crosslinked gelatin, crosslinked albumin, crosslinked sodium alginate, crosslinked carboxymethylcellulose, crosslinked polyvinyl alcohol, and crosslinked chitin,

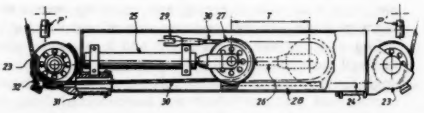
and wherein said dosage form is in the form of a tablet or capsule that maintains the particles in a packed mass prior to their ingestion and then rapidly disintegrates in gastric fluid to permit the particles to disperse in the stomach after their ingestion.

5,007,791

ISO CONTAINER HANDLING SYSTEM

T. Trafford Boughton, Amersham, England, assignor to T. T. Boughton & Sons Ltd., Great Britain

Filed Nov. 10, 1988, Ser. No. 269,859
Claims priority, application United Kingdom, Nov. 13, 1987, 8726608
Int. Cl.[5] B60P *1/00*
U.S. Cl. 414—494 **19 Claims**



1. A load handling device for a vehicle comprising a mast, one end of which is pivotally mounted adjacent the rear of the vehicle for movement about a first horizontal axis, a horizontal cross-member mounted for movement along the length of the mast, elongate flexible tension elements each having a part extending from each end of the cross-emember and provided with load-engaging means at its respective free end, and the device further including means mounted within the cross-member for varying the length of that part of each flexible tension element extending from the respective end of the cross-member.

5,007,792

VEHICLE-MOUNTED LOAD HOISTING DEVICE

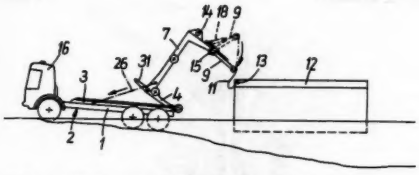
Hans Wiedeck, Mendener Strasse 82, D-4430 Mülheim, Fed. Rep. of Germany, and Michel Chiesura, Residence les Arcs Rue Moliere, F-42160 Andrezieux Boutheon, France

Filed Jul. 18, 1988, Ser. No. 220,672

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1987, 3723604

Int. Cl.[5] B60P 1/16

U.S. Cl. 414—500 17 Claims



1. In a vehicle-mounted load hoisting device for loading and unloading a load from a vehicle, including

a pivot frame having first and second ends; said pivot frame being mounted on the vehicle at said first end for pivotal motion about a first axis extending horizontally and transversely to a longitudinal direction of the vehicle;

a stop face provided on said pivot frame;

a cantilever arm having first and second ends; said cantilever arm being connected at the first end thereof to the second end of said pivot frame for pivotal motion relative to said pivot frame about a second axis extending spaced from and parallel to said first axis;

a power means supported on the vehicle and being articulated to said cantilever arm for pivoting said cantilever arm about said second axis into contact with said stop face;

the improvement comprising

(a) a pivot arm having first and second ends; said pivot arm being articulated at the first end thereof to the second end of said cantilever arm for pivotal motion relative to said cantilever arm about a third axis oriented parallel to said first and second axes and being spaced therefrom;

(b) a pulley mounted at the second end of said pivot arm;

(c) a winch;

(d) an elongated, flexible hoisting means wound on the winch and trained about said pulley and being adapted to extend from said pulley for attachment to the load;

(e) locking means for locking said cantilever arm and said pivot frame together to form a rigid unit pivotal about said first axis; in said rigid unit said cantilever arm being in contact with said stop face and extending as a longitudinally aligned continuation of said cantilever arm; and

(f) a pair of catch hooks for standard pallets and standard containers; said catch hooks are pivotal out of the way.

5,007,793

BULK CONTAINERS AND APPARATUS FOR LOADING BULK CONTAINERS ONTO A TRUCK

John M. Irvin, 2905 Dolphin Dr., Miramar, Fla. 33025

Filed Aug. 21, 1989, Ser. No. 396,579

Int. Cl.[5] B60P 1/36, 1/44

U.S. Cl. 414—502 23 Claims

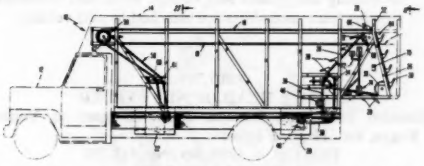
1. A self-loading truck for loading containers having interfacing means, comprising:

an elongate truck bed having a forward end and a rearward end;

lifting chain means mounted at the rearward end of said truck bed for releasably engaging said interfacing means and lifting and suspendedly supporting said containers to be loaded from a support surface onto said truck, said lifting chain means includes a pair of laterally spaced lift chain members, each member of said pair being disposed on an opposite side of said truck bed relative to the other member of said pair and each chain member forming a continuous loop;

horizontally disposed displacement chain means for suspendedly supporting above said truck bed containers lifted from said support surface by said lifting chain means;

said displacement chain means being mounted to said truck and extending substantially the entire longitudinal extent of said truck bed, said displacement chain means includes



a pair of laterally spaced, horizontally disposed chain members, each member of said pair of horizontal chain members being disposed on an opposite side of said truck bed relative to the other member of said pair of horizontal chain members and each horizontal chain member forming a continuous loop; and

said lifting chain means being closely spaced to a rearward end of said displacement chain means so that containers lifted by said lifting chain means are deposited by said lifting chain means onto said displacement chain means.

5,007,794

LOAD-CARRYING ATTACHMENT FOR MOTOR VEHICLES

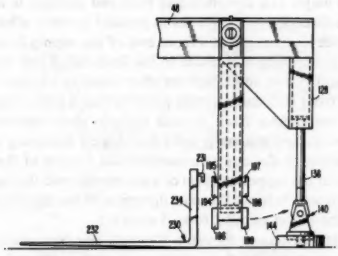
José O. Lombard, Miami, Fla., assignor to Luis A. Figueroa, Coral Gables, Fla.

Division of Ser. No. 171,892, Mar. 22, 1988, Pat. No. 4,880,347.

This application Apr. 27, 1989, Ser. No. 343,684

Int. Cl.[5] B60P 1/46

U.S. Cl. 414—542 20 Claims



1. A load-carrying attachment for a cargo carrying vehicle to unload cargo from or load cargo onto said vehicle when said attachment is attached to said vehicle, said attachment comprising:

a pair of spaced horizontal support beam assemblies having first and second ends, said beam assemblies being connected, said first ends of said support beam assemblies being attachable to said vehicle;

first and second leg members, said first leg member being attached to one of said support beam assemblies, said second leg member being attached to the other of said support beam assemblies;

an elongated mast having a longitudinal axis and being slidably attached to said beam assemblies such that said mast is movable along said beam assemblies, said mast being positioned between said beam assemblies, said mast also

being rotatably attached to said beam assemblies about a horizontal axis substantially perpendicular to said beam assemblies and substantially perpendicular to the longitudinal axis of said mast so as to be rotated between a use position and a non-use position;

a carriage slidably attached to said mast such that said carriage can slide parallel to the longitudinal axis of said mast; and

first means removably attachable to said carriage for engaging a load;

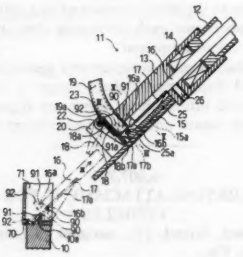
wherein said attachment is capable of unloading cargo from or loading cargo onto said vehicle when said horizontal support beam assemblies are attached to said vehicle.

5,007,795

SUPPLY HEAD OF NUT FEEDER

Masahiro Yoshimura, Nagoya, Japan, assignor to Yajima Kogyo, Inc., Nagoya, Japan

Filed Oct. 6, 1989, Ser. No. 418,311
Int. Cl.[5] B66L *1/00*
U.S. Cl. 414—737 **2 Claims**



1. A supply head of a nut feeder comprising:

(a) a chute having a cylindrical body for transferring a T-shaped welding nut, said nut including a cylindrical tapped portion, and a flange portion formed in the tapped portion and having convexly curved arcuate end surfaces in a major axis direction and both end surfaces in a minor axis direction made planes in parallel to each other;

(b) a sleeve arranged at a front end of the supply head body for connecting said chute to the font end, a coil mounted to said sleeve and a bottom plate fixed to a lower side of the front end, said bottom plate having a pair of grooves;

(c) a nut holder fixed to said bottom plate between said grooves and having a semi-arc shaped receiving surface abutting on the outer circumferential surface of the lower side of the tapped portion of a nut transferred through said chute and holding the axial direction of the tapped portion of the nut in parallel to said sleeve;

(d) a rod arranged movable forward and backward in the sleeve axial direction within said sleeve and selectively magnetized by energization of said coil, a front end of said rod having a holding surface attracting an end surface of the tapped portion of a transferred nut when said coil is energized to magnetize said rod and said rod is moved forward to insert a projection in the tapped hole of the tapped portion of the nut at the center of the holding surface;

(e) a guide member fixed to the front end of said rod, said guide member having two side walls with each side wall movable in one of said bottom plate grooves and guiding an end surface in the minor axis direction of the flange portion of the transferred nut; and

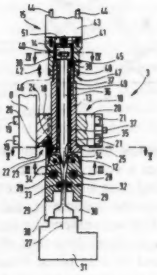
(f) a shutter being opend or closed freely so as to lock the front side of the transferred nut at the front end of said sleeve.

5,007,796

HANDLING SYSTEM FOR WORKPIECES

Walter Sticht, Karl-Heinrich-Waggerl-Strasse 8, A-4800 Attnang-Puchheim, Austria

Continuation of Ser. No. 300,222, Jan. 23, 1989, abandoned, which is a continuation of Ser. No. 175,608, Mar. 28, 1988, abandoned, which is a continuation of Ser. No. 804,292, Dec. 3, 1985, abandoned. This application Feb. 27, 1990, Ser. No. 488,442
Claims priority, application Austria, Dec. 7, 1984, 3887/84
Int. Cl.[5] B25J *15/04*
U.S. Cl. 414—751 **7 Claims**



1. A system for handling a workpiece, comprising

(a) a carrier frame,

(b) a gripper device secured to the carrier frame, the gripper device comprising

(1) gripping means having gripping elements actuatable to

(2) a housing including a cylindrical housing member and a bearer head adjoining one end of the cylindrical housing member and carrying the gripping means,

(3) means for actuating the gripping means arranged in the housing, the actuating means comprising a guiding rod extending through the cylindrical housing member and cooperating with the gripping elements, the cylindrical housing member defining a longitudinal guide for the guiding rod, and

(4) a driving device coupled to the guiding rod at an end of the cylindrical housing member opposite the one end for moving the guiding rod along the longitudinal guide and thereby to actuate the gripping means,

(c) bearing means for the cylindrical housing member, the bearing means comprising

(1) a clamping device holding the cylindrical housing member and securing the housing member with respect to the carrier frame, the clamping device comprising two cooperating clamping parts clamping the cylindrical housing member therebetween radially with respect to a longitudinal axis of the cylindrical housing member, the clamping parts and the bearer head having facing end faces extending in planes extending perpendicularly to the longitudinal axis of the cylindrical housing member, and

(2) the cylindrical housing member having a surface configuration designed to enable the housing member to fit the bearing means and to be held thereby,

(d) a first coupling device between the bearer head and the clamping device and cooperating therewith for holding the bearer head non-rotatably with respect to the bearing means, the first coupling device comprising

(1) aligned bores extending in the end faces of the bearer head and the clamping parts substantially parallel to the longitudinal axis and holding pins inserted into the aligned bores, and

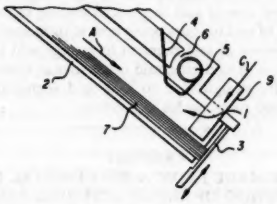
(e) wherein the driving device is replaceably coupled to the guiding rod at the opposite cylindrical housing member end.

5,007,797

HOLD-BACK DEVICE FOR SELECTIVELY SEPARATING SHEETS FED SERIATEM TO A STACK

Rolf Munz, Kernen, Fed. Rep. of Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 15, 1989, Ser. No. 437,006
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1988, 3839305
Int. Cl.[5] B65G *57/00*; B65H *31/32*
U.S. Cl. 414—790.8 3 Claims



1. Apparatus for stacking sheets fed seriatem to a collecting bin where they are collected one on top of the other in a stack, said apparatus comprising:

a hold-back device which is arranged above the stack of sheets and in the area of the leading edges of said stacked sheets and can be temporarily introduced between the complete stack of sheets and sheets subsequently fed to said stack, said hold-back device including at least one rotatably mounted flexible separating finger which is driven by a motor and is directed in opposition to the direction of sheet transport and rotatable both in the direction of sheet transport and in the opposite direction, the separating finger being rotatable when temporarily introduced between the complete stack of sheets and sheets subsequently fed to said stack into a position in which it rests on the sheet stack and forms an inclined feeding surface for subsequently arriving sheets.

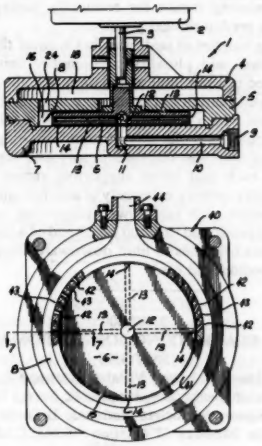
5,007,798

CENTRIFUGAL PUMP

Brian Keane, Clareville, Australia, assignor to Vaqua Limited, Frenchs Forest, Australia

PCT No. PCT/AU87/00423, § 371 Date Aug. 4, 1989, § 102(e) Date Aug. 4, 1989, PCT Pub. No. WO88/04733, PCT Pub. Date Jun. 30, 1988
PCT Filed Dec. 15, 1987, Ser. No. 397,487
Claims priority, application Australia, Dec. 15, 1986, PH9514
Int. Cl.[5] F04D *1/12*
U.S. Cl. 415—88 11 Claims

1. A centrifugal pump having an impellor mounted for rotation about an axis, said impellor having a central inlet chamber with a peripheral wall concentric with said axis and at least one passage extending outwardly from an inlet port in said wall to an exit port radially spaced from said chamber; wherein, stationary inlet port means are located within said chamber for separating the spinning impellor from incoming fluid entering said inlet port means thereby to prevent induced rotation of said incoming fluid, said stationary inlet port means including an annular portion concentric with said axis and in substantial alignment with said impellor inlet port, at least one channel extending radially outwardly from the interior to the exterior



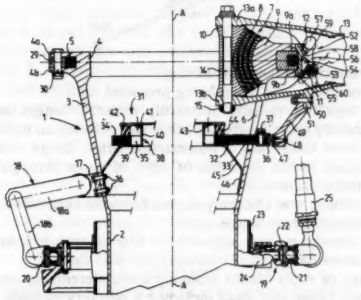
of said annular portion for supplying said incoming fluid to said impellor passage.

5,007,799

FLAPPING RESTRAINER DEVICE FOR ROTORCRAFT ROTOR BLADES, AND ROTOR HEAD COMPRISING SAID DEVICE

René L. Mouille, Aix-en Provence, and Robert J. Suzzi, Marseille, both of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Sep. 22, 1989, Ser. No. 411,128
Claims priority, application France, Sep. 23, 1988, 88 12491
Int. Cl.[5] F01D *3/00*
U.S. Cl. 416—104 21 Claims



1. A flapping restrainer device for the blades of a rotorcraft main rotor, of the type including a hub mast assembly having a retaining means for the retention and articulation of the blades on the hub and at least one tubular part below the retaining means, comprising:

lower flapping restrainer means for restraining flapping of the blades, said lower flapping restraining means comprising at least one rigid component for support of the blades, said at least one rigid component being mounted to slide radially on a support fixed coaxially in the tubular part of the hub mast assembly;

each said blade having a lower supporting runner connected for movement with a root of the respective said blade so

as to limit the displacement of each respective said blade in a downward direction by engagement with said at least one rigid component; wherein said at least one rigid component is a plate having a plurality of branches;

resilient restoring means for resiliently biasing said plate toward a predetermined position;

wherein the number of said branches is equal the number of said blades, said plurality of branches being regularly distributed in a circumferential direction about said plate, each of said plurality of branches extending outwardly in a direction which is substantially radial in relation to said plate; each of said plurality of branches being engaged in respective openings disposed in said hub mast assembly, wherein each said lower supporting runner is disposed substantially entirely externally of said hub mast assembly, and wherein each said lower supporting runner is restrained against said external radial end of a corresponding one of said branches to limit downward flapping of each corresponding said blade.

5,007,800

ROTOR BLADE FIXING FOR TURBOMACHINE ROTORS

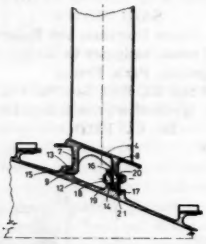
Michel G. P. Hacault, Massy Villaine; Bertrand J. J. M. Heurtel, Vert Saint Denis, and Jacques R. Serre, Melun, all of France, assignors to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation "S.N.E.C.M.A.", Paris, France

Filed Oct. 4, 1989, Ser. No. 417,324

Claims priority, application France, Oct. 5, 1988, 88 13004

Int. Cl.[5] F01D *5/30*

U.S. Cl. 416—220.00 R **4 Claims**



1. A turbomachine rotor having:

a rotor drum, said drum being provided with

at least two radially outwardly directed flanges spaced axially apart from each other and defining an upstream drum flange and a downstream drum flange with respect to the direction of flow of gases through said turbomachine rotor,

a circular row of evenly spaced holes through said downstream drum flange, and

an annular groove adjacent the base of said downstream drum flange on the downstream side thereof;

a stage of rotor blades mounted circumferentially on said rotor drum, said stage including a plurality of blade platforms, each of said platforms carrying

at least two radially inwardly directed flanges spaced axially apart from each other and defining an upstream platform flange and a downstream platform flange cooperating respectively with said upstream and downstream flanges of said drum,

said downstream platform flange having at least one hole registering with at least one of said holes in said downstream drum flange;

a generally cylindrical pin projecting through each pair of registering holes of said downstream drum and platform flanges, each of said pins having

a substantially central radial collar interposed between said downstream drum flange and said downstream platform flange, and

an annular groove disposed downstream of said collar; and

a plurality of scalloped segments disposed in said annular groove of said drum,

each of said segments having its radially outer edge defining teeth separated by a plurality of cut-outs, each of said teeth being received in said annular groove of one of said pins to hold said pins and said rotor blades in position radially, axially and tangentially,

and each of said segments carrying a tongue at each end thereof, one of said tongues extending radially and the other of said tongues being bent at right angles to permit movement of said segment to engage said teeth in said grooves of said pins, said other tongue thereafter being radially straightened to lock said segments, said pins and said rotor blades in position.

5,007,801

IMPELLER MADE FROM A SHEET-METAL DISK AND METHOD OF MANUFACTURING SAME

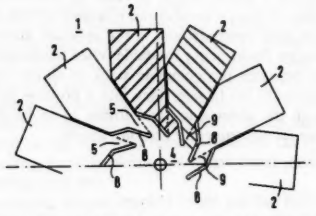
Reinhold Hopfensperger, Dietelskirchen, and Werner Eichhorn, Landshut, both of Fed. Rep. of Germany, assignors to Standard Elektrik Lorenz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 9, 1988, Ser. No. 230,145

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1987, 3726522

Int. Cl.[5] F01D *5/14*

U.S. Cl. 416—223 R **9 Claims**



1. An impeller made from a sheet-metal disk, comprising:

a plurality of radially outwardly extending blades having widths, said blades being formed by radial cuts in the sheet-metal disk,

a circular-saw-blade-shaped flat center piece having saw-tooth-shaped projections, and

a plurality of blade roots bent out of the plane of said center piece and extending from said sawtooth-shaped projections, connecting said blades at approximately a right angle with the plane of said center piece, to said center piece, said blades having radially inward portions extending radially outward from said roots, said radially inward portions having opposite edges defined by the cuts, said radially inward portions of the respective blades having such dimensions that in a development of the impeller with said roots and said blades in the plane of said center piece, the edges of adjacent blades are substantially aligned with fold lines along which said roots are bent out of the plane of said center piece and said blades are separated by approximately S-shaped slots, each of said slots originating at one end thereof at a radially inward end of the fold line along which one of the roots is bent, said each of said slots terminating at a radially outward end thereof along an outward line which is located radially outside of and aligned with the fold line of another of the roots which is adjacent to one of the roots, the outward ends of said slots separating said edges of adjacent blades from each other by gaps which are narrower than the widths of the blades.

6. A method of manufacturing an impeller from sheet material, comprising the following steps:

providing a flat blank,

stamping the blank to form a center piece having sawtooth-shaped projections, blade roots adjacent the sawtooth-shaped projections, and successively adjacent blades extending radially outward from the blade roots, the blades having radially inward portions connected to the roots, the radially inward portions having opposite edges, said step of stamping includes the step of separating the blades with approximately S-shaped slots, each of the slots originating at one end thereof at a radially inward end of the straight line along which one of the blade is bent, each of the slots terminating at a radially outward end thereof along an outward line which is located radially outside of and aligned with the straight line of another of the blades which is adjacent to the one of the blades, the radially outward ends of said slots separating the opposite edges of a respective one of the blades from one of the edges of an adjacent blade by a respective gap which is narrower than widths of the blades, and

bending the blades out of the plane of the center piece by about 90 angular degrees on a straight line at the boundary between the sawtooth-shaped projections and the blade roots.

5,007,802

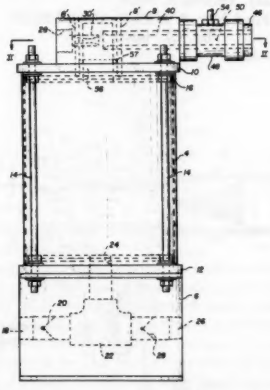
Patent Not Issued For This Number

5,007,803

AIR OPERATED VACUUM PUMP

Anthony M. DiVito, Youngstown, and Lee H. Giesecke, Warren, both of Ohio, assignors to Global Pumps, Inc., East Palestine, Ohio

Filed Sep. 28, 1989, Ser. No. 414,092
Int. Cl.[5] F04F *1/02*
U.S. Cl. 417—137 **15 Claims**



1. A method of pumping corrosive and erosive liquids, abrasive slurries and the like, the method comprising:

providing a fluid-tight pump body having respective inlet and outlet orifices communicating therewith in a lower portion of the pump body and one-way check valve means associated with each of said orifices;

providing nozzle means having an axial bore positioned in an upper portion of said pump body said nozzle means having an inlet end adapted to be placed in communication with a source of pressurized air and having an outlet end communicating with said pump body and in spaced relationship to a first end of an axially aligned exhaust passage;

providing pinch valve means having an elastomeric sleeve in said exhaust passage to permit air flow through said exhaust passage when in an open position and to shut off air flow therethrough when in a closed position; and

providing control means to selectively open and close said pinch valve means;

introducing a flow of pressurized air through said nozzle means and said exhaust passage to create a vacuum condition within said pump body when said pinch valve means is in an open position and to create a pressurized condition within said pump body when said pinch valve means is in a closed position;

regulating the flow of pressurized air to a first flow rate valve through the nozzle means when the vacuum condition exists within the pump body; and

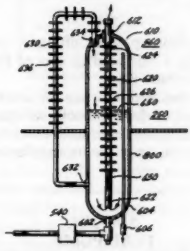
regulating the flow of pressurized air to a second flow rate valve through the nozzle means when the pressurized condition exists within the pump body.

5,007,804

FUEL REACTOR

Robert J. Boucher, P.O. Box 985, Bonner, Mont. 59823

Division of Ser. No. 492,972, Mar. 13, 1990, which is a division of Ser. No. 276,884, Nov. 28, 1988, Pat. No. 4,922,839. This application Jul. 30, 1990, Ser. No. 560,062
Int. Cl.[5] F04B *19/24;* F04F *1/18*
U.S. Cl. 417—209 **3 Claims**



1. A steam pump for inputting a fluid and outputting high temperature-high pressure steam comprising:

a check valve for allowing flow of the fluid to the steam pump but preventing reverse flow;

a pump vessel including an inlet at a first end for receiving the fluid and an outlet at a second end for outputting the high temperature-high pressure steam;

means for predeterminedly heating the second end of the vessel; and

a heat pipe mounted in the pump vessel such that one end thereof extends towards said vessel first end and a second end connects to said vessel outlet,

whereby fluid flows into said vessel filling said vessel towards said vessel second end where it is heated and converted to steam forcing fluid up said heat pipe where it is heated, converted to steam and emerges from said pump vessel outlet.

5,007,805

REVERSIBLE VARIABLE DISPLACEMENT HYDRAULIC DEVICE

James C. Goade, Joliet, Ill., and Claude H. Werner, Manhattan, Ill., assignors to Caterpillar Inc., Peoria, Ill.

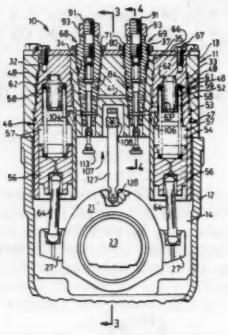
Filed Jul. 2, 1990, Ser. No. 548,808
Int. Cl.[5] F04B *49/00, 1/30;* F01B *13/04*
U.S. Cl. 417—216 **38 Claims**

1. A reversible, variable displacement hydraulic device having a case and a drain cavity defined by the case, an angularly adjustable swash plate resiliently biased to a centered position and moveable in a clockwise direction from the centered position to control the displacement of the device in a first direction of operation and in a counterclockwise direction from the centered position to control the displacement of the device in a second direction of operation, first actuator means

for angularly moving the swash plate in the clockwise direction, and second actuator means for angularly moving the swash plate in the counterclockwise direction, comprising:

first and second servo valve means for controlling communication of hydraulic actuating fluid to the first and second actuator means respectively;

an elongate feedback plate pivotally connected to the case and having opposite end portions disposed in operational contact with the first and second servo valve means;



a "T" shaped follow-up lever pivotally connected to the case and having a pair of arms spaced from the end portions of the feedback plate;

a pair of springs disposed between the arms of the lever and the end portions of the feedback plate; and

means for connecting the lever to the swash plate so that the lever is pivoted in response to angular movement of the swash plate.

5,007,806

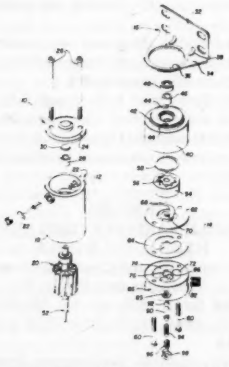
FUEL PUMP

Peter D. Bellis, and Frederick Nesselrode, both of Carson City, Nev., assignors to Mallory, Inc., Carson City, Nev.

Filed Mar. 30, 1989, Ser. No. 330,496

Int. Cl.[5] F04B *17/00, 35/00*

U.S. Cl. 417—360 **34 Claims**



1. In a fuel pump, the combination comprising a fuel reservoir member, said fuel reservoir member being formed with a plurality of fuel chambers, said chambers comprising an inlet chamber and an outlet chamber, means to supply fuel to said inlet chamber, means to deliver fuel from said outlet chamber to a point of use, said fuel reservoir member chambers also including a bypass chamber, means interconnecting said bypass chamber with said outlet chamber; said fuel pump also comprising pump means interconnecting said inlet chamber and said outlet chamber and adapted to suck fuel from said fuel supply means into said inlet chamber, through said pump means, out said outlet chamber, and to said fuel delivery means; said bypass chamber and said pump means providing two substantially separate paths of fuel flow in said fuel reservoir member, bypass plunger means normally closing off the flow of fuel through said bypass chamber, one of said substantially separate paths including said fuel supply means and said fuel delivery means when said bypass plunger means is closed, the second of said substantially separate paths including said bypass chamber when said bypass plunger means is open, and all of said chambers and said interconnecting means therebetween being configured so as to create turbulence in the flow of any fuel supplied to said outlet chamber by said pump means and bypassed through said bypass chamber and said interconnecting means, whereby all of the fuel passing through said fuel pump remains below its vaporization temperature to thereby prevent vapor lock of said fuel pump, said fuel pump comprising an electric motor portion and a pump portion, said electric motor portion comprising a drive shaft extending into said pump portion, said fuel pump also comprising a mounting bracket, said mounting bracket comprising a flange portion formed with a round opening, vibration damper means in said flange portion round opening, means to sandwich said flange between said electric motor and said pump portions of said fuel pump with said electric motor and pump portions on opposite sides of said vibration damper means, and one of said electric motor and pump portions having a portion thereof extending into said flange round opening, whereby said fuel pump can be rotated within said opening around the axis thereof for adjustment of said fuel pump with respect to said mounting bracket.

5,007,807

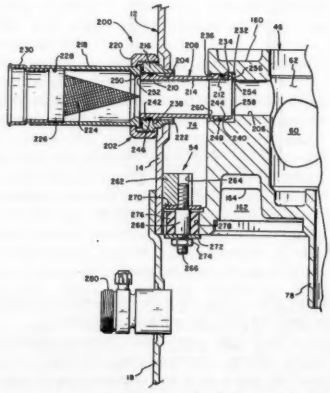
HERMETIC COMPRESSOR HAVING RESILIENT INTERNAL MOUNTING

Edwin L. Gannaway, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Mar. 8, 1989, Ser. No. 320,564

Int. Cl.[5] F04B *39/00*

U.S. Cl. 417—363 **20 Claims**



1. In a vertically disposed compressor assembly comprising a compressor mechanism within a hermetically sealed housing having a sidewall, wherein said compressor mechanism includes a radially extending mounting flange having a top surface and a bottom surface, a mounting apparatus for resiliently mounting said compressor mechanism to said housing sidewall, comprising:

a plurality of circumferentially spaced mounting bores formed in said mounting flange, each said mounting bore extending vertically through said mounting flange between said top surface and said bottom surface thereof;

a plurality of anchoring members corresponding to said plurality of mounting bores, each said anchoring member being connected to said housing sidewall and extending substantially coaxially through a respective said mounting bore, thereby defining an annular space intermediate the anchoring member and the mounting bore;

a plurality of resilient members corresponding to said plurality of mounting bores, each said resilient member being disposed within a respective mounting bore in a manner to substantially occupy said annular space; and

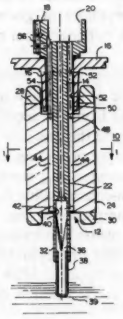
a plurality of axial support means corresponding to said plurality of anchoring members, for axially supporting said compressor mechanism, each said axial support means being connected to a respective anchoring member and contacting said mounting flange bottom surface at a location thereon circumjacent a respective said mounting bore, whereby said compressor mechanism is axially supported and movement of said compressor mechanism in a lateral plane is resiliently restrained.

5,007,808

SLOTTED ROTOR LUBRICATION SYSTEM

Howard H. Fraser, Jr., Lafayette, and Mark P. Weldon, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 15, 1989, Ser. No. 451,152
Int. Cl.[5] F04B *39/02*
U.S. Cl. 417—368 **5 Claims**



1. A vertical rotor structure for a hermetic compressor, the rotor structure comprising:

a shaft having a central portion of a predetermined diameter and an upper portion of a greater diameter which fits into a bearing of the compressor, said shaft having an axial central bore, and means on a lower end of said shaft for carrying a liquid lubricant into the bore of said shaft;

a rotor disposed on the central portion of said shaft and formed of a stack of laminations, with an upper one of said laminations abutting a lower end of said upper portion of the shaft, said stack having a central bore to receive said shaft central portion and at least one slot therein continuous with said central bore and extending generally axially;

a lower distribution channel communicating radially from the central bore to a lower end of said at least one slot for permitting the lubricant to flow into said at least one slot where it is driven by rotational forces to an upper end of the at least one slot; and

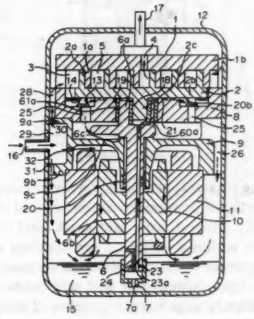
at least one upper distribution channel in said shaft upper portion which communicates through a lower end of the upper portion directly with the upper end of said at least one slot and which conducts the lubricant from the upper end of said at least one slot to one or more bearing surfaces of said upper portion.

5,007,809

SCROLL COMPRESSOR WITH DIVIDING CHAMBER FOR SUCTION FLUID

Tadashi Kimura; Tetsuzo Matsugi, and Yasuyuki Suzuki, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1989, Ser. No. 442,152
Claims priority, application Japan, Dec. 7, 1988, 63-310327
Int. Cl.[5] F04B *39/06*; F04C *18/04*; H02K *9/12*
U.S. Cl. 417—371 **10 Claims**



1. A scroll compressor comprising:

a compression mechanism comprising a combination of a fixed scroll and an orbiting scroll;

a main shaft for driving the orbiting scroll;

an electric motor rotor and stator for driving the shaft;

a first bearing frame for supporting the orbiting scroll in the axial direction via a bearing;

a second bearing frame for supporting the shaft in the radial direction via a bearing;

a hermetic shell including the compression mechanism in an upper portion, the rotor and stator in a lower portion, and a suction pipe for inspiring a working fluid; and

means forming a dividing chamber arranged in the shell so as to communicate with the suction pipe and having efflux holes for respectively directing the inspired working fluid into three separate paths, said paths comprising a first path directed to the compression mechanism in the upper portion, a second path directed to the stator and rotor in the lower portion, and a third path directed to an upper coil end of the stator placed in a position lateral to the chamber.

5,007,810

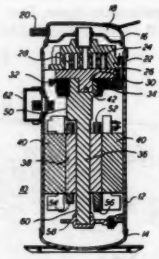
SCROLL COMPRESSOR WITH UNITARY CRANKSHAFT, UPPER BEARING AND COUNTERWEIGHT

Howard H. Fraser, Jr., Lafayette, and Thomas R. Barito, East Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 4, 1989, Ser. No. 445,552
Int. Cl.[5] F04B *35/04*; F04C *18/04, 29/00*
U.S. Cl. 417—410 **5 Claims**

1. A scroll compressor of the type including a shell which contains a fixed scroll and an orbiting scroll which is disposed off the axis of the fixed scroll for revolving about the axis of the fixed scroll, rotation-preventing means for holding the orbiting scroll against rotation but permitting it to revolve in an orbiting motion, an electric motor stator mounted within said shell and having a cylindrical passage therethrough of a predetermined radius, an electric motor rotor assembly rotatably journalled within the shell for driving said orbiting scroll in its

orbiting motion, the rotor assembly including an elongated crankshaft, a generally cylindrical rotor mounted on said crankshaft and fitting in said generally cylindrical passage of said stator, a crank situated at an upper end of said crankshaft and that is journalled in a journal housing member beneath said orbiting scroll, said crank including eccentric mounting means for driving said orbiting scroll and imparting said orbiting motion thereto, a counterweight on said crankshaft which balances the off-axis orbiting motion of said orbiting scroll, and



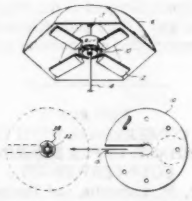
a lower bearing rotatably journalling a lower end of said crankshaft; wherein the improvement comprises said counterweight being integrally formed with said shaft, said counterweight being disposed within a radius no greater than said predetermined radium so as to be dimensioned to pass through said stator passage upon installation, and said conterweight being formed immediately adjacent the position of said crank below said journal housing, there being no structure other than the rotor assembly within said predetermined radius between said motor stator and said journal housing.

5,007,811

ELECTRIC FAN FOR PATIO UMBRELLA

Michael H. Hopkins, 315 W. 2nd St., Brenham, Tex. 77833

Filed Jul. 13, 1989, Ser. No. 379,085
Int. Cl.[5] A45B *23/00*
U.S. Cl. 135—16 **22 Claims**



1. An electric fan drive mountable on and about a unitary support shaft comprising:

a rotatable drive ring wherein said support shaft is positioned substantially perpendicular to and extending through said drive ring;

support means positioned on the outer surface of said unitary support shaft for rotatably supporting said drive ring;

an electric motor fixedly positioned adjacent said support shaft, said motor having at least one rotatable motor shaft extending from said motor; and

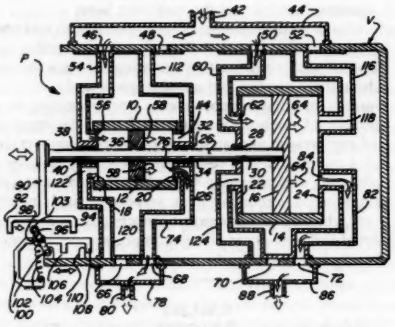
drive means coupling said motor shaft to said drive ring and adapted to transfer rotary motion from said motor shaft to said drive ring.

5,007,812

HYDRAULIC PUMP WITH PULSATING HIGH AND LOW PRESSURE OUTPUTS

Joseph R. Hartt, 6352 S. Poplar Ct., Englewood, Colo. 80122

Filed Sep. 5, 1989, Ser. No. 402,603
Int. Cl.[5] F04B *21/02*
U.S. Cl. 417—534 **17 Claims**



1. A method for providing a pulsating high pressure fluid output simultaneously with a pulsating low pressure output from a single high pressure, substantially non-compressible fluid input comprising the step of:

supplying a substantially non-compressible fluid from a single fluid supply inlet at a first pressure simultaneously to one side of a first cylinder of given diameter and one side of a second cylinder of given diameter to move a piston within each cylinder from one end thereof to the other; and

simultaneously discharging the same fluid from the first cylinder on the side of the piston opposite the one side at a high pressure and from the second cylinder on the side of the piston opposite the one side at a lower pressure.

3. An hydraulic pump for providing a simultaneous pulsating high pressure and pulsating low pressure fluid output from a single, substantially non-compressible fluid input at a predetermined pressure, said pump comprising:

a first double acting piston and cylinder having first diameters, respectively, said first cylinder having a pair of first and second inlets on opposite sides of said first piston and a pair of first and second outlets on the opposite side of said first piston;

a second double action piston and cylinder having second diameters, respectively, said second cylinder having a pair of first and second inlets on opposite sides of said second piston and a pair of first and second outlets on opposite sides of said second piston;

a common piston rod interconnecting said pistons; and

means for alternately supplying a single, substantially non-compressible fluid to said first inlets of said first and second cylinders on said one side of each of said of said pistons, and then to said first inlets on said other side of each of said pistons to cause said first and second pistons to reciprocate within said first and second cylinders, respectively, so that said first piston discharges the same fluid through an outlet on the opposite side of said first piston from the inlet through which fluid enters to provide high pressure pulsating fluid output from said outlets of said first cylinder and said second piston discharges the same fluid through an outlet on the opposite side of said second piston from the inlet through which fluid enters to provide low pressure pulsating fluid output from said outlets of said second cylinder.

5,007,813

ROTARY ROLLING PISTON COMPRESSOR WITH FIXED VANE HAVING A RELIEVED INCLINE SECTION

Caio N. F. N. Da Costa, Joinville, Brazil, assignor to Empresa Brasileira de Compressores S/A - Embraco, Joinville, Brazil

Filed Jun. 12, 1989, Ser. No. 365,176
Claims priority, application Brazil, Jun. 15, 1988, 8802997
Int. Cl.[5] F04C *18/356, 29/02*
U.S. Cl. 418—63 11 Claims

1. A rotary rolling piston compressor comprising:
a shell,
a cylinder mounted within said shell,
a piston having an eccentric portion for rotation within said cylinder,
a shaft for rotating said piston,
a slot formed on an external part of said cylinder,
the shell containing lubricating oil which is also in the slot,
a vane whose lower end is within said slot, means for biasing the vane lower end to provide for reciprocating motion between the slot walls as the vane upper end rides against the rotating piston, the vane defining with the cylinder and piston on one side of the vane a suction chamber and on the other side a compression chamber,
the upper portion of the vane on the suction chamber side being planar in a plane parallel to the face of the compression chamber side of the vane, the lower portion of said vane on the suction chamber side having at least one relieved inclined section of not more than about 5° to the vertical axis of the vane which is within the walls of the slot to produce a hydrodynamic wedge with the lubricating oil between the inclined section and the side wall of the slot on the suction chamber side as the vane moves down toward the lower end of the slot.

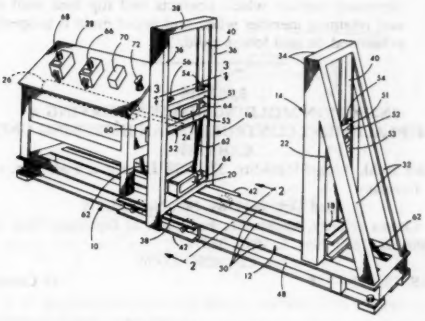
5,007,814

DEVICE FOR SEPARATING AND CLOSING A SPLIT MOLD HAVING TWO HALVES

Raymond L. Saunders, 16895 Town Hall Rd., Walworth, Wis. 53184, and Joseph M. Forrestal, 1800 Patton Pl., Janesville, Wis. 53546

Filed Feb. 5, 1990, Ser. No. 475,035
Int. Cl.[5] B29C *45/64*
U.S. Cl. 425—3 8 Claims

1. A device for separating and closing in a horizontal press a split mold having two halves to permit access to said mold halves, the device comprising:
(a) a base which the split mold may be positioned and supported, wherein the base has at least one horizontal beam adapted to carry the weight of the split mold positioned thereon;
(b) a stationary platen that extends upwardly from and is rigidly connected to the base and has an electromagnet mounted thereon capable of exerting an attractive electromagnetic force upon a first of the two halves of the split mold when the mold is positioned upon the base and the first of the two mold halves is positioned adjacent the stationary platen;
(c) a movable platen that extends upwardly from the base and that opposed the stationary platen, the movable platen capable of travel toward and away from the stationary platen and the movable platen having an electromagnet mounted thereon capable of exerting an attractive electromagnetic force upon a second of the two halves of the split mold when the mold is positioned upon the base and the second of the two mold halves is positioned against the movable platen;
(d) a cross member rigidly affixed to the movable platen and extending in the direction of the base beam and slidably engaged with the base beam to retain the perpendicularity of the movable platen relative to the base; and
(e) means for moving the movable platen toward and away from the stationary platen, the movement of the movable



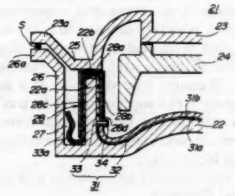
platen toward the stationary platen acting to close the clearances between the halves of the split mold and the platens and the movement of the movable platen away from the stationary platen separating the first of the two mold halves from the second of the mold halves by the attractive electromagnetic force of the electromagnet of the stationary platen holding the first mold half against the stationary platen and the attractive electromagnetic force of the electromagnet of the movable platen holding the second mold half against the movable platen.

5,007,815

MOLD ASSEMBLY FOR PRODUCING SKIN-COVERED FOAMED PLASTIC ARTICLE

Makoto Shoji, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Oct. 25, 1989, Ser. No. 426,554
Claims priority, application Japan, Oct. 31, 1988, 63-142207[U]
Int. Cl.[5] B29C *39/10, 39/26*
U.S. Cl. 425—117 7 Claims



1. A mold assembly for producing a skin-covered foamed plastic article, comprising:
a lower mold having a cavity formed therein, said lower mold including a bottom wall, an outer wall which extends around a periphery of said bottom wall, and an inner wall which extends inside of a first portion of said outer wall with a given clearance defined therebetween, said inner wall having two opposed ends integrally connected to said outer wall, said inner wall being adapted to be covered with an outside part of an outer skin member when said outer skin member is properly positioned

within said cavity, said cavity being defined by said bottom wall, a portion of said outer wall, and said inner wall;

a retaining member constructed of a resilient material, said retaining member defining a channel which is adapted to resiliently and detachably receive therein said inner wall with said outside part of said outer skin sandwiched therebetween, said retaining member including a top base wall, an inner wall extending downwardly from an inner edge of said top base wall, and an outer wall extending downwardly from an outer edge of said top base wall; and

an upper mold which is adapted to be placed on top of said lower mold to lose said cavity, said upper mold having a depressed portion which contacts said top base wall of said retaining member when said upper mold is properly positioned on said lower mold.

5,007,816

INJECTION MOLDING MACHINE HAVING A DISPLACEMENT CONTROL FOR AN INJECTING UNIT CARRIER

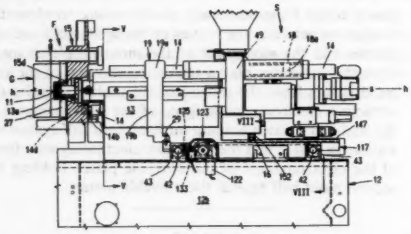
Karl Hehl, Arthur-Hehl-Str. 32, 7298 Loburg 1, Fed. Rep. of Germany

Filed Oct. 26, 1989, Ser. No. 431,174

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1988, 3837640; Nov. 5, 1988, 3837641

Int. Cl.[5] B29C *45/76*

U.S. Cl. 425—135 **15 Claims**



1. In an injection molding machine for selective use with a first injection mold having a first stationary mold part formed with a central gate and with at least one second injection mold having a second stationary mold part formed with an off-center gate for forming a non-symmetrical sprue, which machine comprises

a machine pedestal defining a horizontal longitudinal direction and provided with horizontal tracks extending in a transverse direction at right angles to said longitudinal direction,

a clamping unit mounted on said pedestal and operable in said longitudinal direction and comprising a stationary mold support, which is adapted to carry said first stationary mold part with said central gate disposed at a first location and to carry said second stationary mold part with said off-center gate disposed at a second location, said stationary mold support being formed with an opening which extends in a plane in said transverse direction and registers in said longitudinal direction with said first and second locations,

an injecting unit defining an injection axis extending in said longitudinal direction,

a cast iron carrier, which carries said injecting unit and is coupled thereto for a movement in said transverse direction and is displaceable on said track means in said transverse direction together with said injecting unit between a first operating position, in which said injection axis is aligned in said longitudinal direction with said first location, and at least one second operating position, in which said injecting axis is aligned in said longitudinal direction with said second location,

a screw drive, which engages said machine pedestal, said screw drive being operatively connected to said carrier and operable to move said carrier and said injecting unit to each of said operating positions and to fix said carrier in each of said operating positions,

actuating means for reciprocating said injecting unit relative to said carrier in each of said operating positions in said longitudinal direction through said opening of said stationary mold support to and from injecting positions adjacent to said first and second locations,

the improvement residing in that

said carrier is formed with at least one retaining opening, said at least one retaining opening extending in said transverse direction and having an open outer end,

said screw drive being incorporated in a control device, said control device being operable under program control to control operation of said screw drive, said control device comprising a displacement measuring device for measuring displacement of said carrier along said tracks, and

said control device being detachably mounted in said at least one retaining opening and is held therein against a movement relative to said carrier in said longitudinal direction and said control device being movable out of said retaining opening through said open outer end thereof in said transverse direction.

5,007,817

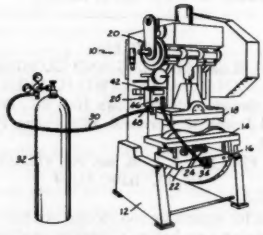
PRESS WITH DIE CUSHION GAS MONITOR

Bernard J. Wallis, 2215 Dacosta, Dearborn, Mich. 48128

Filed Jan. 19, 1990, Ser. No. 467,189

Int. Cl.[5] B30B *15/14, 15/28*

U.S. Cl. 425—136 **11 Claims**



1. A pressure monitor for use in a press that includes a pair of die sections, a ram for propelling one of said die sections against the other for forming a workplace positioned therebetween, and a die cushion coupled to one of said die sections for cushioning force of engagement of said die sections, said die cushion including at least one gas cylinder coupled to said one section and a manifold for feeding gas under pressure to said cylinder, said pressure monitor comprising:

a pressure sensor coupled to said manifold for supplying an electrical pressure signal as a function of gas pressure in said manifold,

means for comparing said pressure signal to a predetermined threshold for supplying an alarm signal when gas pressure in said manifold is less than said threshold, and

means coupled to said ram and responsive to said alarm signal for disabling operation of said ram.

5,007,818

APPARATUS FOR THERMOPLASTICALLY SHAPING POLYMERIC RESINS

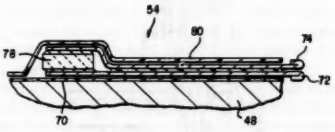
Martin B. Barancik, Evansville, Ind., and Erich O. Teutsch, Pittsfield, Mass., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 28,647, Mar. 20, 1987, Pat. No. 4,897,028. This application Sep. 19, 1989, Ser. No. 409,356

The portion of the term of this patent subsequent to Jan. 30, 2007, has been disclaimed.

Int. Cl.[5] B29F *1/08*

U.S. Cl. 425—144 6 Claims



1. An apparatus for the production of a thermoplastically moldable polymeric resin article of a predetermined shape, by shaping the resin while in a thermoplastic state and which comprises; a mold having

(i) mold walls including an interior molding surface defining the predetermined shape; and

(ii) means associated with the mold walls for controlling the thermoplasticity of the resin being shaped;

the improvement, which comprises;

as the means for controlling the thermoplasticity of the resin being shaped, a thin-film resistance heater disposed on the molding surface.

5,007,819

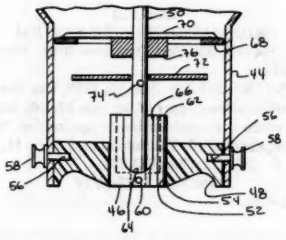
DOUGH DISPENSER

Edward M. Anderson, 2620 E. Medicine Lake Dr., Plymouth, Minn. 55441

Filed Apr. 12, 1988, Ser. No. 180,390

Int. Cl.[5] A21C *3/04, 11/16*

U.S. Cl. 425—184 19 Claims



1. A dough dispenser, comprising

(a) a dough hopper;

(b) a removable cutter defining a dough outlet of said hopper;

(c) a reciprocable piston in and normally closing said outlet;

(d) piston drive means connected to said piston for moving the piston along its length within this said outlet; said drive means moving a stroke which is less than a height of said piston;

(e) a dough dispensing port in and through one radial side of the piston, said port being movable from a normal closed position within the outlet to an alternative dispensing position which is at least in part out of the outlet; and

(f) in which at least a portion of said piston is always within said outlet.

5,007,820

MACHINE FOR KNEADING DOUGH PORTIONS INTO A ROUND SHAPE

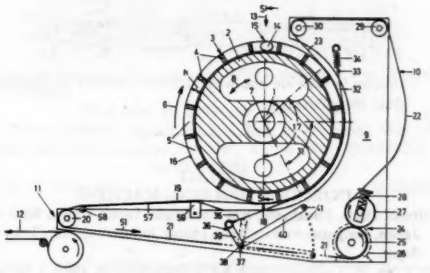
Wilhelm Schwab, Knittlingen, and Gerhard Müller, Asperg, both of Fed. Rep. of Germany, assignors to Werner & Pfleiderer, GmbH, Fed. Rep. of Germany

Filed Jun. 6, 1989, Ser. No. 362,070

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1988, 3821045

Int. Cl.[5] B21C *3/00*

U.S. Cl. 425—333 23 Claims



1. A machine for kneading dough portions into a generally spherical shape, comprising:

a cylindrical kneading drum movable rotatably about the drum central axis and movable axially thereof, the drum having a rotatable, compartmented drum mounted concentrically thereof, the compartmented drum comprising kneading chambers extending radially of the drum and open radially outwardly and radially inwardly toward the kneading drum, the machine further comprising an endless kneading belt looped around the compartmented drum and having a portion in contact with the compartmented drum over a contact zone of less than 180° of peripheral arc of the compartmented drum peripheral surface, wherein the endless belt has a positive drive means which is independent of bearing forces between the belt and the compartmented drum surface, tension of the belt being such that bearing forces exerted by the kneading belt on the compartment drum is less than forces exerted on the belt by the dough portions being kneaded, and wherein the kneading belt is movable radially of the compartmented drum.

5,007,821

INJECTION MOLDING MANIFOLD HAVING A PAIR OF COOLING BORES ON OPPOSITE SIDES OF THE MELT PASSAGE

Harald H. Schmidt, Georgetown, Canada, assignor to Mold-Masters Limited, Georgetown, Canada

Filed Mar. 5, 1990, Ser. No. 489,044

Claims priority, application Canada, Feb. 23, 1990, 2010961

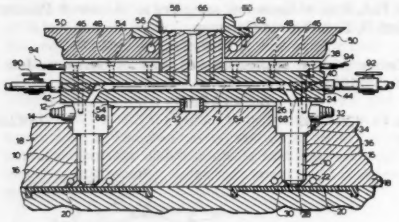
Int. Cl.[5] B29C *45/73*

U.S. Cl. 425—548 3 Claims

1. In an elongated injection molding steel heated manifold having a first end, an opposite second end and a melt passage with a longitudinal portion extending therethrough to convey melt received at an inlet from a molding machine to a plurality of outlets, each outlet leading to a heated nozzle, the improvement comprising;

a pair of cooling bores to convey cooling fluid therethrough extending longitudinally through the manifold from said first end of the manifold to said second end of the manifold, the pair of cooling bores extending parallel to the longitudinal portion of the melt passage and being equally spaced on opposite sides of the longitudinal portion of the melt passage, each cooling bore extending from an inlet at

the first end of the manifold to an outlet at the second end, each cooling bore having a spiral vane mounted directly



therein to provide one way turbulent flow of the cooling fluid therethrough.

5,007,822

INJECTION MOLDING MACHINE

Hitoshi Hara, Funabashi, and Katsutoshi Inoue, Chiba, both of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

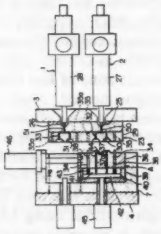
PCT No. PCT/JP88/00859, § 371 Date Apr. 19, 1989, § 102(e) Date Apr. 19, 1989, PCT Pub. No. WO89/01860, PCT Pub. Date Mar. 9, 1989

PCT Filed Aug. 29, 1988, Ser. No. 362,461

Claims priority, application Japan, Aug. 28, 1987, 62-212929

Int. Cl.[5] B29C *45/04*

U.S. Cl. 425—575 **4 Claims**



1. An injection molding machine comprising:

a plurality of stationary molds securely disposed in a row on a stationary platen and transversely arranged parallel to one another;

a moving mold which forms at least one mold cavity when coupled with each said stationary molds;

a mold holder formed with a passage within which the moving mold is disposed and is linearly slidable in a direction parallel to the row of stationary molds, said mold holder being mounted on a moving platen;

a plurality of injection units coupled, respectively, with said plurality of stationary molds;

transfer means for conveying the moving mold along said passage to positions, respectively, opposite each of said plurality of stationary molds; and

clamping means for moving said movable platen to apply pressure between said moving mold and a respective stationary mold;

wherein said moving mold protrudes a short distance of not more than 0.05 mm toward said stationary mold from an end surface of said mold holder facing said stationary mold, said distance being selected such that slanting between said moving and stationary molds under pressure from within, due to off-center pressure of said clamping means, is minimized.

5,007,823

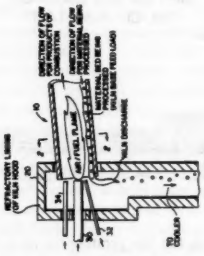
DUST RECYCLING TO ROTARY KILNS

Leo G. Mayotte, Whitehall, and Prince B. Eleazer, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 1, 1989, Ser. No. 444,493

Int. Cl.[5] F27B *15/00, 7/32*

U.S. Cl. 432—14 **4 Claims**



1. In a process for the operation of a rotary kiln for the thermal processing of a mineral feed by combustion of a fuel with air producing a flame in said kiln and in which a dust is generated from the mineral feed and is recovered from the combustion products exiting said kiln and recycled to said kiln, the improvement which comprises: enriching the air fed into said kiln to combust fuel introduced into said kiln with oxygen concurrently with the recycling of said dust, raising the amount of oxygen sufficiently to raise the concentration of oxygen to above 21% in said kiln and to thereby tend to shorten and intensify said flame and balancing the amount of dust being recycled to said kiln with consequent cooling of and lengthening of said flame against the amount of oxygen enrichment, thereby maintaining the temperature profile of said kiln at the same level as when the kiln was operated without oxygen enrichment and without dust recycling, and wherein the material being processed is a mineral selected from the group consisting of aluminas, clays, limes, cements and other oxides, and the amount of dust recycled comprises between 2% and 20% by weight of the feed material.

5,007,824

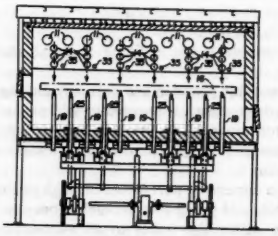
SKID MARK ERASURE SYSTEM

Clarence W. Sidwell, 320 Fort Duquesne Blvd., Pittsburgh, Pa. 15222-2363

Division of Ser. No. 369,345, Jun. 15, 1989, Pat. No. 4,936,771, which is a continuation-in-part of Ser. No. 89,406, Aug. 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 886,117, Jul. 16, 1986, abandoned. This application May 11, 1990, Ser. No. 523,051

Int. Cl.[5] F27B *9/14*

U.S. Cl. 432—20 **1 Claim**



1. A method for removing skid marks from metal shapes transported through a reheat furnace, said furnace of the type having a plurality of parallel spaced-apart, water-cooled sup-

port rails longitudinally extending therein for supporting the metal shapes thereon as the metal shapes are moved through said furnace, the method comprising:

providing a plurality of high thrust burner means aligned in longitudinally extending, spaced-apart arrays positioned above each of the water-cooled support rails, wherein the high thrust burner means includes a plurality of spaced burner pairs, each of said burner paris being aligned in a converging manner such that a flame developed by each overlap one another to produce a higher temperature zone in the overlap region;

sensing the presence of cold skid marks on the metal shapes and controlling said high thrust burner means for activating selected burners located above metal shapes having skid marks detected thereon and for deactivating other selected burners located above metal shapes having no skid mark detected thereon;

directing a high velocity flame front from each of said activated burners to impinge directly upon a surface of said metal shapes at a location above said water-cooled support rails;

heating the metal shapes in the location above said eater-cooled support rails and thereby removing a skid mark therefrom; and

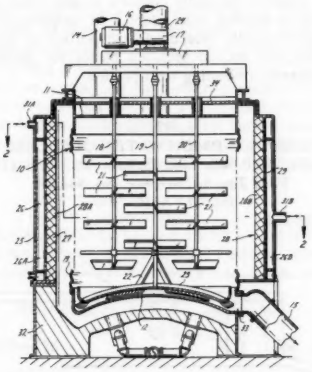
including the step of directing high velocity flame fronts from burner means positioned below said metal shapes and aligned along said support rails.

5,007,825

HEAT RECLAMATION APPARATUS

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed May 21, 1990, Ser. No. 525,650
Int. Cl.[5] F27D *1/08*
U.S. Cl. 432—99 **4 Claims**



4. Apparatus for processing gypsum material in a heat conservation furnace comprising:

(a) a kettle for receiving gypsum material to be heat treated;

(b) a furnace surrounding said kettle and including an outer wall, an inner porous luminous fire wall spaced from said outer wall and having a flame illuminated heating space surrounding said kettle;

(c) means said furnace dividing said space between said outer wall and said porous luminous fire wall into separate portions;

(d) controllable means connected into said furnace outer wall for supplying fuel and air into each of said separate portions one at a time for combustion in said separate portions of said porous luminous fire wall to release products of combustion into said heating space, and said controllable means including means for evacuating products of combustion from said heating space through each of said separate portions of said porous luminous fire wall one at a time; and

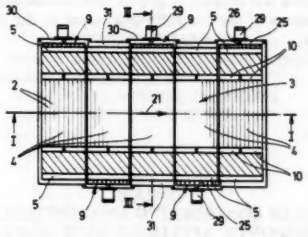
(e) control means operably connected to said controllable mean for alternating the release of the products of combustion into said heating space and the evacuation of the products of combustion from said heating space in a sequence that maintains the temperature of the kettle higher than the temperature of the porous luminous fire wall, and alternates said separate portions of said porous luminous fire wall into a heat sink for returning the heat therein to support combustion.

5,007,826

ROLLER HEARTH FURNACE FOR THE HEAT TREATING OF METAL AND CERAMIC PARTS

Joachim Wünning, Berghalde 20, 7250 Leonberg 7, Fed. Rep. of Germany

Filed May 15, 1989, Ser. No. 351,794
Claims priority, application Fed. Rep. of Germany, May 14, 1988, 3816503; European Pat. Off., Apr. 4, 1989, 89105863.8
Int. Cl.[5] F27D *3/00*
U.S. Cl. 432—121 **20 Claims**



1. A roller hearth furnace for the heat treatment of parts passing therethrough, comprising:

a thermally insulated housing forming a heating space therein, and

a plurality of roller modules removably mounted in said housing for transporting parts longitudinally through said heating space, said roller modules being successively arranged along a direction of transport of the parts, each roller module including:

a pair of transversely spaced apart bearing beams removably supported in recesses formed in said housing, and

a plurality of rotatably driven rollers having their ends supported by said bearing beams, said rollers extending transversely of the direction of travel of the parts and being successively arranged along such direction of transport, said rollers being rotatable about stationary axes and being removable from said heating space along with said bearing beams in a direction transversely of said direction of transport.

5,007,827

ORTHODONTIC TWEEZERS

Paul A. DiFranco, 511 W. Talcott, Parkridge, Ill. 60068

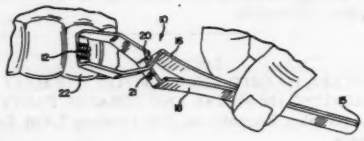
Filed Jul. 11, 1989, Ser. No. 378,005
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—4 **3 Claims**

1. In a tweezer comprising a pair of generally flat elongated members placed in an adjacent lengthwise relationship with one another, each member having a first end and a second end, the first ends of the members being fixably secured to one another, the first member and the second member crossing over one another between said first ends and said second ends, wherein the improvement comprises:

a first means for gripping integrally formed at the second end of the first member, the first means for gripping including a first vertical member having a first peripheral

edge extending generally in the direction of the longitudinal axis of the tweezer and a first horizontal member extending inwardly from the first vertical member at said first peripheral edge;

and a second means for gripping being integrally formed at the second end of the second member, the second means for gripping including a second vertical member having a second peripheral edge extending generally in the direc-



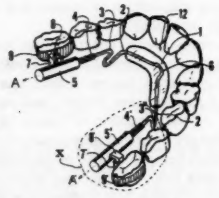
tion of the longitudinal axis of the tweezer and a second horizontal member extending inwardly from the second vertical member at said second peripheral edge thereof, towards the first horizontal member, whereby the first and second means for gripping cooperate to form a U-shaped gripping jaw adapted to grip an orthodontic brace behind the wings of the brace for placement of the brace on a tooth.

5,007,828

MOLAR CONTROLLING AND POSITIONING ORTHODONTIC APPLIANCE WITH SIMPLIFIED ORIENTATION, PRESSURE AND ADJUSTMENT MECHANISMS

Farel Rosenberg, Beverly Hills, Calif.

Filed Feb. 8, 1990, Ser. No. 476,734
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—18 **2 Claims**



1. A dental appliance for use as a molar movement inducer, inhibitor and controller comprised of:

a. A semi-rigid pad with a soft tissue contacting lower surface to be held in place against a tissue covered basal, bony area posterial to the front teeth;

b. A U-shaped wire embedded at its center n said semirigid pad and bent at each end into an S-shaped spring;

c. An externally threaded plunger rigidly attached at each end of said S-shaped spring;

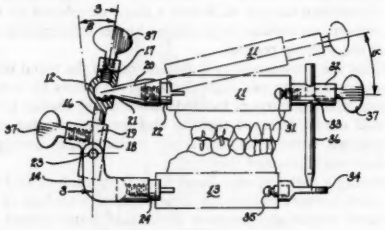
d. A pair of hollow cylinders internally threaded and engaging said plungers, each cylinder provided with an insert to permit detachable joining to a receptacle attached to the lingual surface of said molar, whereby the hollow cylinders can be initially fully threaded onto said plungers, the pad placed against the applicable tissue covered basal bony area and each cylinder inserted into its corresponding receptacle, this attachment serving to produce a posterior force on each molar.

5,007,829

DENTAL ARTICULATOR APPARATUS

Frank C. Farrell, 18402 N. 70th Dr., Peoria, Ariz. 85345

Filed Aug. 22, 1988, Ser. No. 234,867
Int. Cl.[5] A61C *11/00*
U.S. Cl. 433—61 **10 Claims**



1. A dental articulator apparatus, comprising:

a ball joint having a ball member and a socket member, said ball member having an associated first joining means for removably coupling said ball member to a posterior aspect of a first teeth cast and said socket member further having a socket portion, a downwardly extending stem portion and first securing means for controlling movement of said ball member within said socket member;

second joining means for removably coupling to a posterior aspect of a second teeth cast said second joining means comprising a substantially L-shaped member having upstanding co-planar members defining a vertical slot therebetween, a pintle member disposed horizontally across said vertical slot and supported by said upstanding co-planar members and a substantially horizontal leg portion adapted to removably couple to the second teeth cast; and

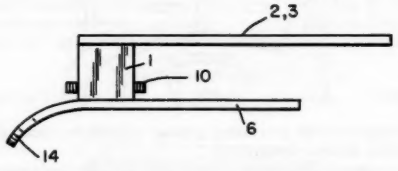
a pivot member, pivotally coupled to said pintle member, having an internal bore adapted to reciprocally receive said downwardly extending stem portion of said socket member and second securing means for securing said downwardly extending stem portion.

5,007,830

DEVICE FOR DETERMINING THE OCCLUSAL PLANE

Eugene Joffe, 79-10 34th Ave., Jackson Hts., N.Y. 11372

Filed Jun. 6, 1989, Ser. No. 362,268
Int. Cl.[5] A61C *19/04*
U.S. Cl. 433—68 **7 Claims**



1. A device for determining an acclusal plane for teeth positioning in detal prostheses, comprising

two first members pivotable about vertical axes in a first plane which can be aligned with an ear-nose plane of a patient;

a second member vertically adjustable relative to said first members and therefore said first plane so as to be brought in contact with plastic material on a base plate placed on an occlusal surface of remaining teeth or placed in correspondence with a lip line, said second member being movable parallel to said first members so that upon said contact said second member determines a position of a required occlusal surface;

means for moving said second member relative to said first

members and including an adjusting element manually movable by a user;

a holding body, said first members being arranged pivotally relative to said holding body, said second member being arranged vertically displaceable relative to said holding body and having two pins;

two pivot pins each defining a respective one of said axes of pivoting of said first members,

said holding body having two guiding openings in which said pins of said second member are vertically movably, said holding body further having two further guiding openings in which said pivot pins are turnably received, said first mentioned guiding openings being coaxial with said second mentioned guiding openings.

5,007,831

DENTAL HANDPIECE COMPRISING A GRIP PART

Thomas Bierbaum, Lorsch, and Johann Hain, Heppenheim-Kirschhausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 3, 1989, Ser. No. 346,734

Claims priority, application Fed. Rep. of Germany, May 16, 1988, 3816612

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—114 **15 Claims**

1. In a dental handpiece having an elongated grip part provided with a surface that is a non-slip surface in comparison to the remaining surface of the handpiece, the improvements comprising the non-slip surface being formed by a plurality of thin lines having a roughened surface, said thin lines having first portions extending in a longitudinal direction of the handpiece, each of said lines having a second portion extending at an angle to the first portion to form a line pattern and said lines being arranged in at least two quadrants on the circumference of the grip part that lie diametrically opposite one another.

5,007,832

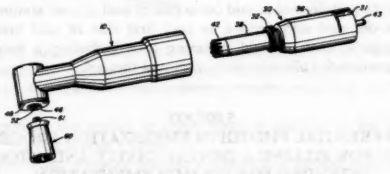
DISPOSABLE RIGHT ANGLE DENTAL HANDPIECE

Moshe Meller, Lakewood, and Michael Feldman, Howell, both of N.J., assignors to MTI Precision Products, Inc., Lakewood, N.J.

Filed Mar. 30, 1990, Ser. No. 502,454

Int. Cl.[5] A61C *1/08*

U.S. Cl. 433—126 **28 Claims**



1. A disposable dental handpiece comprising:

an outer housing made of a disposable plastic material and having an elongated opening therein for receiving a drive shaft means;

a cavity in said outer housing for receiving a driven rotatable gear member;

means for coupling a working member to said driven gear member for performing a working operation in an oral cavity of a patient;

a re-usable drive shaft means removably mounted in said elongated opening in said outer housing, said re-usable drive shaft means including:

a metallic drive shaft housing removably mounted in said outer housing;

a rotatable metal drive shaft mounted in said drive shaft housing and being rotatable relative to said drive shaft housing, said metal drive shaft having means at one end portion thereof which is driven by a dental drive means of a dental tool, so as to be rotatably driven within said outer housing; and

a driving gear at a distal end portion of said drive shaft, which distal end portion is opposite from said one end portion thereof, for engaging with said driven gear; and

means for removably coupling said re-usable drive shaft means to said outer housing for removably securing said re-usable driven shaft means in said elongated opening of said outer housing such that said driving gear is in engagement with said driven gear during use, and for permitting disengagement of said re-usable drive shaft means from said outer housing for disposal of said outer housing.

5,007,833

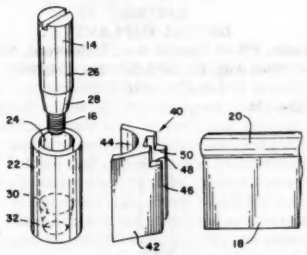
BUTTRESS CHANNEL

Norman K. Barbone, Mansfield, Ohio, assignor to Implant Plastics Corporation, Mansfield, Ohio

Filed Jul. 10, 1990, Ser. No. 550,661

Int. Cl.[5] A61C *13/12, 13/225, 8/00*

U.S. Cl. 433—172 **12 Claims**



1. A structural element for forming a transition joint between a support bar and an associated mounting sleeve in the fabrication of support structure for holding prosthetic teeth, said structural element comprising:

a solid elongated body molded of a resinous plastic material, an outwardly open recess extending longitudinally of the body along a first side thereof, said recess being sized and adapted throughout its length to closely engage an exterior of said mounting sleeve in a direction axially thereof, an outwardly open elongated groove having a width to resiliently engage the support bar, said groove extending longitudinally of the body along a second side opposite said first side, said second side being narrower than said first side and said body tapering in thickness from said first side to said second side.

5,007,834

MANUFACTURE AND INSTALLATION OF A DENTAL PROSTHESIS

Sergio Rubinstein, 1451 Brandywine La., Buffalo Grove, Ill. 60089, and Masayuki Hoshi, 9004 Kennedy Dr., Des Plaines, Ill. 60016

Filed Oct. 12, 1989, Ser. No. 420,274

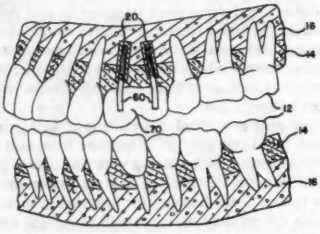
Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—173 **17 Claims**

1. A method of making an article used in the manufacture of

a dental prosthesis of the type utilizing an implant member, having a threaded bore, adapted to be placed beneath gum tissue and into underlying bone structure, comprising the following steps:

providing an analog of said implant member;



providing a temporary threaded shank, formed of meltable material;

screwing said shank into said analog; and

forming on an upper surface of said shank a temporary model of a post for said prosthesis, said model being formed of meltable material.

5,007,835

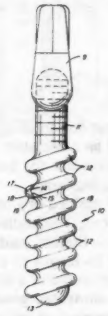
DENTAL IMPLANT

Maurice Valen, 198-45 Foothill Ave., Holliswood, N.Y. 11423

Filed Aug. 17, 1989, Ser. No. 394,906

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—174 **20 Claims**



1. A dental implant and tap combination for threaded insertion of said dental implant into a drilled and tapped bore hole having tapped wall threads created by a first tap for tapping into maxillary bone and a second tap for tapping into mandibular bone, said drilled and tapped bore hole providing a bore hole wall of undercut threads for the subsequent threading of said dental implant, said dental implant having a thread length of rounded threads, said rounded threads of said dental implant radially extending beyond an outer diameter of threads of said first or second tap causing compression against the wall of said undercut threads and said bore hole, whereby a controlled compressive force is provided by the threaded dental implant against said bore hole wall in said jaw bone for providing sufficient holding strength to withstand masticatory loads, but insufficient compression for causing necrosis.

5,007,836

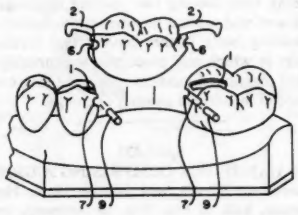
GROOVE LOCK DENTAL BRIDGE ATTACHMENT AND METHOD

Donald W. Gayso, 1092 Perkins Ter., Memphis, Tenn. 38115

Filed May 26, 1988, Ser. No. 198,875

Int. Cl.[5] A61C *13/12*

U.S. Cl. 433—181 **14 Claims**



1. An artificial dental appliance for being positioned between adjacent first and second abutment teeth, each of said abutment teeth having an outer end and being modified to have a groove in said outer end thereof, said appliance comprising:

(a) bridge means for extending between said outer end of said first abutment tooth and said outer end of said second abutment tooth, said bridge means having a first side for being positioned adjacent said outer end of said first abutment tooth and having a second side for being positioned adjacent said outer end of said second abutment tooth, said first side of said bridge means having a groove therein, said second side of said bridge means having a groove therein; said groove in said outer end of said first abutment tooth and said groove in said first side of said bridge means being aligned with one another when said appliance is positioned between said abutment teeth; said groove in said outer end of said second abutment tooth and said groove in said second side of said bridge means being aligned with one another when said appliance is positioned between said abutment teeth;

(b) first securing means for securing said first side of said bridge means to said first abutment tooth, said first securing means including retaining means for being inserted into said groove in said outer end of said first abutment tooth and said groove in said first side of said bridge means; said retaining means of said first securing means including a retaining pin for being inserted into said groove in said outer end of said first abutment tooth and said groove in said first side of said bridge means; and

(c) second securing means for securing said second side of said bridge means to said second abutment tooth, said second securing means including retaining means for being inserted into said groove in said outer end of said second abutment tooth and said groove in said second side of said bridge means; said retaining means of said second securing means including a retaining pin for being inserted into said groove in said outer end of said second abutment tooth and said groove in said first side of said bridge means; each of said retaining pins including a handle portion for allowing easy removal thereof.

5,007,837

DIFFERENTIAL PHOTOPOLYMERIZATION PROCESS USED FOR FILLING A DENTAL CAVITY AND A TOOL INTENDED FOR ITS IMPLEMENTATION

Marc Werly, Paris, France, assignor to Ellena, Wissembourg, France

Filed Mar. 24, 1988, Ser. No. 172,562

Claims priority, application France, Mar. 26, 1987, 87 04230

Int. Cl.[5] A61C *5/04*

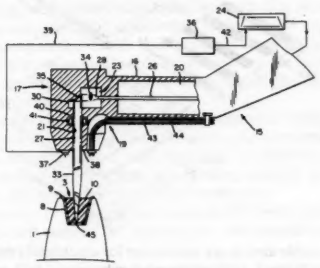
U.S. Cl. 433—226 **11 Claims**

1. A process of filling a cavity with photosensitive resin

materials which are capable of being solidified by means of photopolymerization, comprising the steps of:

depositing a layer of a first resin material, which is photosensitive at a first predetermined level of luminous radiation, upon the walls of said cavity;

subsequently depositing a mass of a second resin material, which is photosensitive at a second predetermined level of luminous radiation which is different than said first predetermined level of luminous radiation, upon said layer of said first resin material;



subsequently exposing said first and second resin materials to said luminous radiation at said second predetermined level so as to harden only said second resin material by photopolymerization; and

subsequently exposing said first and second resin materials to said luminous radiation at said first predetermined level so as to harden said first resin material by photopolymerization.

5,007,838

TACTILE ENHANCEMENT METHOD FOR PROGRESSIVELY OPTIMIZED READING

Kirby Cochran, Provo, Utah, assignor to American Business Seminars, Inc., Provo, Utah

Filed Feb. 20, 1990, Ser. No. 482,388

Int. Cl.[5] G09B *17/00*

U.S. Cl. 434—178 **15 Claims**

2. A method which associatively stimulates a reader's senses comprising auditory, visual, and tactile to increase reading speed and comprehension, said method comprising the steps of:

causing the reader to ingest reading material as his finger travels across a page;

providing a reader-training prerecorded stereophonic audio recording which comprises two separate and independent channels of prerecorded signals, the prerecorded signals collectively comprising reading-rate-setting signals, subliminal affirmation signals, and aural interference reduction signals;

delivering the reading-rate-setting signals to only one ear and thence directly to one hemisphere of the brain of the reader to stimulate and focus rapid reader eye movement in conjunction with rapid tactile scanning of sequential lines of print on a page of written material at rates which suppress the tendency for subvocalization of individual words;

delivering the subliminal affirmation signals predominately related to the spoken word to one ear only and thence directly to one hemisphere of the brain;

delivering aural interference reduction signals to both ears and of the reader to reduce the detrimental effect of external noise.

5,007,839

VACUUM CLEANER HOSE CONSTRUCTION, INSERT THEREFOR AND METHODS OF MAKING THE SAME

Homer N. Holden, Sylva, and Philip K. Loyer, Waynesville, both of N.C., assignors to Dayco Products, Inc., Dayton, Ohio

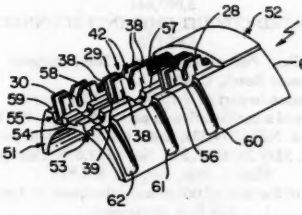
Division of Ser. No. 234,783, Aug. 22, 1988, Pat. No. 4,894,021.

This application Oct. 26, 1989, Ser. No. 427,269

The portion of the term of this patent subsequent to Jan. 16, 2007, has been disclaimed.

Int. Cl.[5] H01R *4/60*

U.S. Cl. 439—191 **11 Claims**



1. In a vacuum cleaner hose construction that comprises an elongated vacuum hose having an end and an electrical conductor extending helically therealong and being provided with an end portion at said end, an electrical terminal connector carried by said hose and being fixed to said end portion, and an insert for holding said connector and its interconnected end portion in a predetermined position, the improvement wherein said insert has opposed ends one of which has a substantially straight sot means therein and an angular groove means therein leading to said slot means and intersecting the same at an angle relative thereto, the other of said opposed ends of said insert having opening means therein, said connector having opposed ends respectively disposed in said slot means and said opening means to be held thereby, said end portion of said conductor being disposed in said angular groove means.

5,007,840

OPERATIONS PROCESSOR

Martin Gaskell, 21 Western Road, Tring, Herts., HP23 4BQ, United Kingdom

Filed Dec. 12, 1989, Ser. No. 449,554

Claims priority, application United Kingdom, Dec. 14, 1988, 8829200

Int. Cl.[5] G09B *19/02*

U.S. Cl. 434—206 **3 Claims**

1. A multiplication operations processor comprising at least two concentric cylinders, the first of said cylinders having marked thereon a periodical array of numbers which comprises a first table having a first row of numbers representing a first operand and a column of numbers representing a second operand under each number of said first row and a second table displayed under said first table representing a solution to a multiplication of said first and second operands in which the first row of said first table comprises the numbers 1 to 12 consecutively and inclusively and each of the columns comprises numbers 0 to 12 consecutively, and said first of said cylinders retained within the second of said cylinders, and the

second of said cylinders having two or more indicating means, and the first of said indicating means exposing the second

operand and the second of said indicating means exposing the solution of said multiplication operation.

5,007,841

INTEGRATED-CIRCUIT CHIP INTERCONNECTION SYSTEM

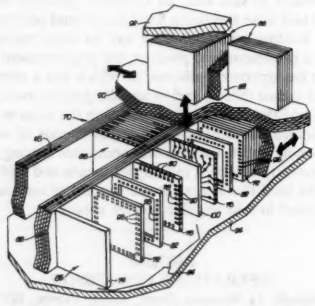
Robert Smolley, Porteuguese Bend, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 499,137, May 31, 1983, abandoned, and a continuation-in-part of Ser. No. 499,136, May 31, 1983, Pat. No. 4,574,331, and a continuation-in-part of Ser. No. 737,631, May 24, 1985, Pat. No. 4,581,679. This application Mar. 3, 1986, Ser. No. 835,818

The portion of the term of this patent subsequent to Apr. 8, 2003, has been disclaimed.

Int. Cl.[5] H05K *1/14*

U.S. Cl. 439—66 **55 Claims**



1. An integrated-circuit (IC) chip packaging construction, comprising:

an integrated circuit chip having a plurality of contact areas;

a rigid insulating board having a plurality of openings therethrough, with at least some of the openings at positions corresponding to the IC chip contact areas;

a circuit board having contact areas at positions corresponding to some of the openings in the insulating board;

a plurality of conductive connector elements disposed in selected ones of the openings in the insulating board, each of said connector elements including a wadded strand of conductive wire that is deformed when compressed and makes multiple electrical contacts with the IC chip and circuit board contact areas; and

means for compressing the IC chip toward the circuit board, thereby compressing the connector elements and making electrical contact between the IC chip contact areas and the circuit board contact areas.

5,007,842

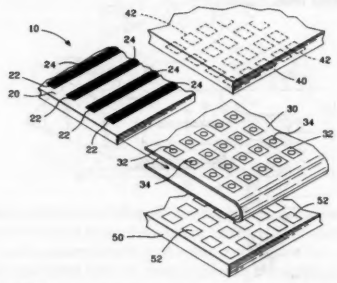
FLEXIBLE AREA ARRAY CONNECTOR

Frederick R. Deak, Kernersville, and David B. Wrisley, Jr., Greensboro, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 11, 1990, Ser. No. 596,163

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—66 **5 Claims**



1. A flexible area array connector for electrically connecting circuit pads on a pair of spaced substrates, said connector comprising:

a force application plate having a slot therethrough;

a spring member secured within said slot so as to extend beyond both surfaces of said plate;

a flexible interconnect member having conductive pads on a surface thereof;

said flexible member being folded around said force plate so that said conductive pads overlie said spring member on both surfaces of said plate; and

said flexible member and said force plate being disposed between substrates so that said conductive pads face circuit pads on the substrates.

5,007,843

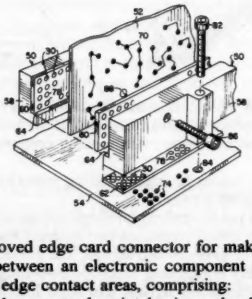
HIGH-DENSITY CONTACT AREA ELECTRICAL CONNECTORS

Robert Smolley, Porteuguese Bend, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 835,818, Mar. 8, 1986, which is a continuation-in-part of Ser. No. 499,137, May 31, 1983, abandoned, and Ser. No. 499,136, May 31, 1983, Pat. No. 4,574,331, and Ser. No. 737,631, May 24, 1985, Pat. No. 4,581,679. This application Mar. 16, 1987, Ser. No. 26,327

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—66 **12 Claims**



1. An improved edge card connector for making electrical connections between an electronic component and a circuit board having edge contact areas, comprising:

an edge card connector housing having a plurality of contact areas to which leads from the electronic component are connected;

a first rigid insulating board disposed between the connector

housing and the circuit board, the insulating board having a plurality of openings at positions corresponding to the connector housing contact areas and the circuit board contact areas;

a plurality of conductive connector elements disposed in selected ones of the openings in the insulating board; and

means for compressing the connector housing and the circuit board together, thereby compressing the connector elements and making electrical contact between the connector housing contract areas and the circuit board contact areas;

wherein the connector housing includes:

an edge card connector housing having a first plurality of contact areas for connecting leads in the connector housing to the circuit board contact areas and a second plurality of contact areas for connecting the leads in the connector housing to contact areas on the electronic component;

a second rigid insulating board disposed between the connector housing and the electronic component, the insulating board having openings at positions corresponding to the connector housing contact areas and the electronic component contact areas;

a plurality of conductive connector elements disposed in selected ones of the openings in the second insulating board; and

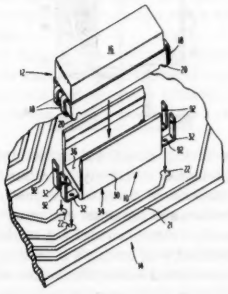
means for compressing the connector housing and the electronic component together, thereby compressing the connector elements and making electrical contact between the connector housing contract areas and the electronic component contact areas.

5,007,844

SURFACE MOUNT METHOD AND DEVICE

Scott C. Mason, Fort Collins, and Robert A. Slutz, Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 17, 1990, Ser. No. 466,169
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—68 **23 Claims**



1. A device for effecting electrical and mechanical connections between a surface mount electrical component and conductive pads on a printed circuit board, said device comprising:

socket means for receiving a surface mount electrical component, said component comprising a body member and a plurality of J-shaped leads; and

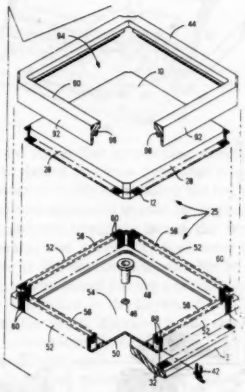
a plurality of contact elements mounted on said socket means, each of said contact elements having a first portion for soldering the contact element to a conductive pad on a printed circuit board and a second portion for soldering said contact element to a J-shaped lead of said electrical component, said first portion extending away from said socket means, and said second portion being at a distal end of the first portion to define an intermediate portion between the socket means and the second portion that overlays the conductive pad when said socket means is positioned on said printed circuit board, said intermediate portion providing an access space for soldering said contact element to said conductive pad and for visually inspecting a resulting solder joint.

5,007,845

LOW HEIGHT CHIP CARRIER SOCKET

Dimitry G. Grabbe, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 3, 1989, Ser. No. 431,519
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—73 **13 Claims**



1. A low height chip carrier socket for electrically connecting leads on the chip carrier to respective pads on a mounting surface, wherein the leads are spaced apart and projecting from a peripheral edge of the chip carrier, said socket comprising:

(a) a body having a chip carrier receiving cavity;

(b) a plurality of contacts in said body arranged for electrically connecting each of said leads to a respective one of said pads, each said contact including a contacting portion and an opposed backup portion;

(c) means for positioning and aligning each of said plurality of contacts with respective ones of said leads when said chip carrier is in said cavity so that each said lead is adjacent its respective contacting portion; and

(d) locking means for wedging between each said lead and said backup portion so that each said lead is urged into pressing electrical contact with its respective contacting portion, said locking means including means for forming each said lead about the contacting portion of its respective contact.

5,007,846

SPECIALIZED FRAME FOR RETAINING AN EDGE CONNECTOR ON A PRINTED CIRCUIT BOARD

Gonen Ravid, 29034 Acanthus Ct., Agoura Hills, Calif. 91301

Filed Jun. 11, 1990, Ser. No. 536,963
Int. Cl.[5] H01R *23/70*
U.S. Cl. 439—79 **13 Claims**

1. A frame for retaining and mounting on a printed circuit board an edge connector having a multiplicity of female connector members, the printed circuit board including at least one elongated slot running adjacent an edge of the printed circuit board, the frame comprising:

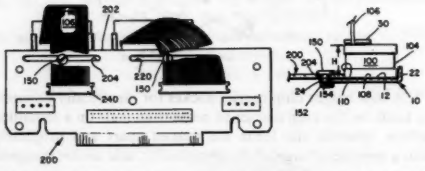
a. a bottom including a front edge, a rear edge, a first side edge and a second side edge;

b. a front lip affixed along said front edge of said bottom and extending generally perpendicular to the front edge;

c. a transverse opening extending through the bottom at a location adjacent said rear edge of said bottom;

d. a first side bracket having a sidewall affixed to said first side edge of said bottom and extending generally perpendicular to the side edge and a top lip affixed to the sidewall at a location remote from the bottom and extending generally perpendicular to the side wall and generally parallel to the bottom;

e. a second side bracket having a sidewall affixed to said second side edge of said bottom and extending generally perpendicular to the side edge and a top lip affixed to the sidewall at a location remote from the bottom and extending generally perpendicular to the side wall and generally parallel to the bottom; and



f. the top lips of each respective first and second side bracket extending toward each other and over the bottom;

g. attaching means for attaching the frame to the printed circuit board;

h. whereby said edge connector is retained within said frame such that the edge connector rests between the bottom and the top lip of the first and second side brackets, the front of the edge connector lies adjacent the front lip and the female connector members are unobstructed by the front lip, and the frame is attached to the printed circuit board by attaching means which extend through the slot in the printed circuit board and through the transverse opening in the frame with the frame affixed beneath the printed circuit board such that the edge of the printed circuit board adjacent the slot functions as a rear lip to retain the edge connector between the front lip of the frame and the printed circuit board.

5,007,847

UNIVERSAL GROUND ADAPTER ASSEMBLY

David S. Dixon, Old Lyme, and Nicholas Schade, Oakdale, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

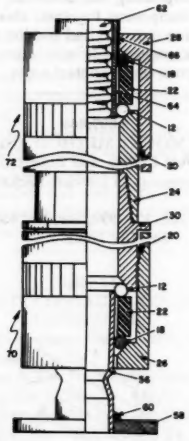
Filed Jun. 18, 1990, Ser. No. 539,954

Int. Cl.[5] H01R 4/66

U.S. Cl. 439—100 **10 Claims**

1. A universal ground adapter assembly, electrically and mechanically connecting first and second members defining interior spaces of selected same and different particular outside dimensions selected over a range of comparatively greater and lesser outside dimensions, and shielding the interior spaces of the first and second members against electromagnetic interference, comprising:

first and second subassemblies each having opposing ends, one end of one of the first and second subassemblies having an electrically conductive connection annulus itself having ends, the connection annulus terminates on one of its ends in an outer threaded wall defining an electrically conductive male connector and terminates on the other of its ends in an outer threaded wall of a preselected outer dimension, one end of the other one of the first and second subassemblies having an electrically conductive connection annulus itself having ends, the connection annulus of the other one of the first and second subassemblies terminates on one of its ends in an inner threaded wall defining an electrically conductive female connector and terminates on the other of its ends in an outer threaded wall having a preselected outer dimension, said male and said female connectors each having a preselected predetermined dimension reciprocally selected to allow male/-female interconnection therebetween, each of the other ends of the first and second subassemblies having an electrically conductive member receiving annulus itself having ends, one end of each of the electrically conductive



member receiving annuli having an inner preselected dimension selected to closely fit around the particular outside dimension of a respective one of said first and second members and the other end of each of the electrically conductive member receiving annuli terminating in an inner threaded wall having a preselected inside dimension, the preselected inside dimensions of said threaded walls of said ends of said member receiving annuli and said preselected outside dimensions of said ends of said connection annuli being selected to allow their mutual threaded interconnection, the preselected outside dimensions of said ends of said connection annuli being selected in direct proportion to the particular outside dimensions of corresponding ones of said first and second members being connected within said range;

means cooperative with said connection and member receiving annuli of each of said first and second subassemblies for electrically contacting respective ones of said first and second members; and

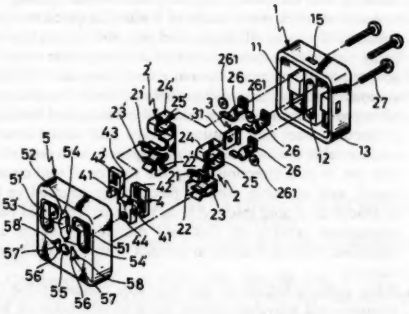
means cooperative with said electrical contacting means and said connection and member receiving annuli of each of said first and second subassemblies for environmentally sealing said electrically contacting means.

5,007,848

MULTIPURPOSE SAFETY RECEPTACLE

Chiu-Shan Lee, No. 133-2, Lane 163, San Ho Rd., Section 4, San Chung City, Taipei Hsien, Taiwan

Filed Aug. 3, 1989, Ser. No. 388,876
Int. Cl.[5] H01R *13/652, 27/00*
U.S. Cl. 439—101 9 Claims



1. A multipurpose safety receptacle including:

an upper cover comprising a pair of L-shaped pin holes bilaterally disposed at the top, an oval hole in the middle, a first round hole in the oval hole, two square holes set on the top and the lower end respectively of said oval hole, a second round hole set at a lower position below said oval hole, and a pair of openings each symmetrically set at a side of the second round hole, said pair of openings each being comprised of an elongated hole, a round hole and a square hole;

a division plate comprising bilaterally two opposite guide rails and two opposite slots, and a notch and a round hole in the middle;

a bottom block having two receiving troughs spaced apart laterally from each other and a ground connection trough disposed between said receiving troughs, and a plurality of retaining holes spaced around the periphery of said block;

two conductive frames being respectively set in said two receiving troughs of said bottom block, each comprising a spring leaf, a receiving plate, an U-shaped conducting plate, an U-shaped frame, said U-shaped frame comprising a corrugated track for setting therein of a control plate;

a ground connection frame having slightly inclined top end vertically bending downward to define a curved portion at both lateral sides for easy connection thereto of ground connection pins of different size;

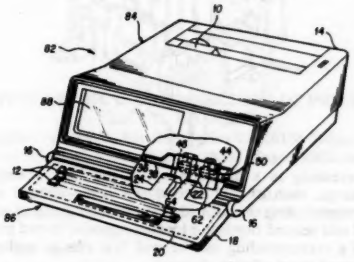
characterized in that when a plug which has L-pins is connected thereto the L-pins are inserted to contact said guide rails of said division plate and further moved downward to contact said spring leaves of said conductive frames to let electric power be connected; when a plug which has flat plug pins is connected thereto the flat plug pins are inserted to set in between said receiving plates and said U-shaped conducting plates and to get connected with said receiving plates and said U-shaped conductive plates so as to let electric power be connected; when a plug which has two round plug pins or square plug pins is connected thereto the plug pins are inserted therein to set in said U-shaped conducting plates to let electric power be connected.

5,007,849

SIGNAL LINE CONNECTING STRUCTURE FOR A KEYBOARD OF ELECTRONIC APPARATUS

Akira Shinoda, Ohbu, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Jan. 29, 1990, Ser. No. 471,890
Claims priority, application Japan, Mar. 27, 1989, 1-34415[U]
Int. Cl.[5] H01R *35/00*
U.S. Cl. 439—165 10 Claims



1. A keyboard signal line connecting structure electrically connecting a keyboard to a host apparatus comprising:

a hinge member pivotally connecting the keyboard to a front face of the host apparatus so that the keyboard can assume a folding attitude uprightly facing the front face of the host apparatus and a virtually horizontal laid-down attitude whereby the keyboard is operable by an operator;

a key switch circuit board having a plurality of key switches arranged in a matrix in the keyboard;

a main controller board disposed inside the host apparatus, provided with electronic component parts for controlling the host apparatus; and

a flexible connecting printed circuit board which is one-piece with the key switch circuit board, said flexible connecting printed circuit board connecting a number of signal lines of the key switch circuit board to corresponding signal lines of the main controller board, extending from said key switch circuit board to the main controller board, and being provided with a bend section which increases its degree of bend when the keyboard assumes one of the folding attitude and the laid-down attitude, and decreases its degree of bend when said keyboard assumes the other attitude, said bend section being located inside a space within said host apparatus and wherein a portion of said keyboard extends inside of said space of said host apparatus, said portion including a slot wherein said flexible connecting printed circuit board passes from inside said keyboard through said slot and into said space.

5,007,850

CATHODE RAY TUBE SOCKET HAVING AN IMPROVED HIGH VOLTAGE DISCHARGE HOUSING

Hirofumi Inaba, and Yasunori Nishikawa, both of Yao, Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Sep. 14, 1989, Ser. No. 407,081
Claims priority, application Japan, Sep. 29, 1988, 63-128607; Sep. 29, 1988, 63-128608
Int. Cl.[5] H01R *13/53;* H01J *29/00*
U.S. Cl. 439—182 5 Claims

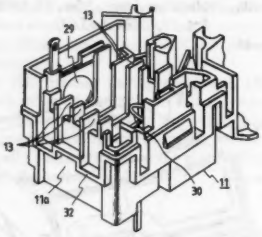
1. A cathode ray tube socket which is provided with a socket body having a plurality of contacts disposed in a circle and a high voltage discharge gap housing provided on one side of said socket body,

said high voltage discharge gap housing comprising a case formed as a unitary structure with said socket body and having an open end face, and a cover which overlies said opened face of said case;

said case having a plurality of plate-shaped first ribs formed on an inner wall surface of said case, said plurality of first

ribs extending along said inner wall surface in a direction across a high voltage discharge in parallel and spaced-apart relation to one another; and

said cover having a plurality of plate-shaped second rigs formed on an inner wall surface of said cover to extend



therealong in a direction across the high voltage discharge, each of said second ribs being aligned with a corresponding one of said first ribs, end portions of each of said second ribs being located opposite to end portions of a corresponding one of said first ribs in a close but spaced-apart relation thereto.

5,007,851

POWER SOCKET

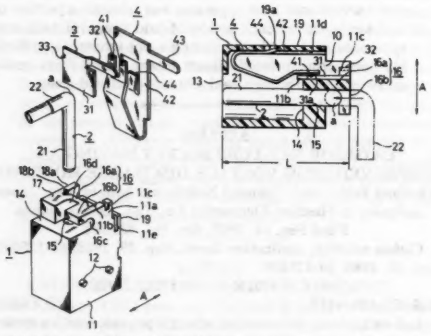
Koji Matsumoto, Yao, Japan, assignor to Hosiden Corporation, Yao, Japan

Filed Oct. 4, 1990, Ser. No. 592,593

Claims priority, application Japan, Oct. 12, 1989, 1-119276[U]

Int. Cl.[5] H01R *29/00*

U.S. Cl. 439—188 **21 Claims**



1. A power socket comprising:

a housing;

an opening into and from which a plug is to be inserted and removed, said opening formed at the front end surface of said housing;

a rear wall having a pin insertion hole and formed at that position of the rear end surface of said housing which is opposite to said opening;

a pin having a plug connection portion and a terminal portion molded in an L-shape, said plug connection portion being inserted through said pin insertion hole into the hollow portion of said housing, said terminal portion extending along said rear wall and projecting toward a circuit board on which said power socket is to be mounted;

a stationary contact piece having (i) a plate portion having a stationary contact and (ii) a terminal which extends from said plate portion and which projects from said housing toward said circuit board, said stationary contact piece being disposed, with respect to said pin, in a direction along the surface of said circuit board;

a fixing portion formed at said stationary contact piece for securing said stationary contact piece to said housing;

a movable contact piece made of a metallic piece molded substantially in an U-shape, said movable contact piece being provided at one end thereof with movable contacts adapted to be separated from or come in contact with said stationary contact and at the other end thereof with a seat plate portion from which a terminal extends, said terminal projecting from said housing toward said circuit board, said movable contact piece being disposed, with respect to said pin, in said direction along the surface of said circuit board, said movable contact piece being adapted to be displaced by a plug inserted in or removed from said plug connection portion so that said movable contacts are separated from and come in contact with said stationary contact;

a fixing portion formed at said movable contact piece for securing said movable contact piece to said housing; and

an engagement fixing body engaged with the rear portion of said terminal portion of said pin for securing said terminal portion to said housing, said engagement fixing body being formed on said rear wall.

5,007,852

ELECTRICAL CABLE ASSEMBLY

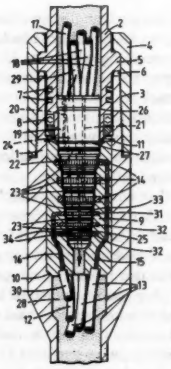
Alan J. Dean, Aberdeenshire, and Hans P. Hopper, Abderdeen, both of Scotland, assignors to The British Petroleum Company p.l.c., London, England

Continuation of Ser. No. 173,226, Mar. 24, 1988, abandoned. This application Jan. 17, 1990, Ser. No. 469,751

Claims priority, application United Kingdom, Mar. 26, 1987, 8707308

Int. Cl.[5] H01R *4/60*

U.S. Cl. 439—201 **9 Claims**



1. An electrical cable assembly formed of at least two lengths of joined pipe each length comprising:

(i) a length of hollow pipe having means at either end for joining lengths of the pipe,

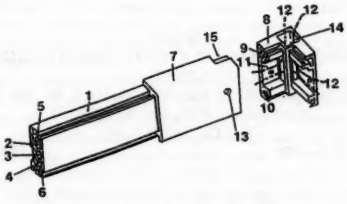
(ii) at least one electrical cable within the pipe, and
(iii) a connector at each end of the cable adjacent to the ends of the pipe having at least one electrical contact so that on joining the lengths of the pipe the connectors are also automatically joined to form an electrical path through the joint,
(iv) the connector at one end of the pipe being a male connector and at the other end being a female connector,
(v) at least one electrical contact on each connector being a ring contact, and
(vi) each length of pipe having a passageway through its between the connectors, each connector having a passageway through it between the pipes, and each connection having access from the passageway to the area of the contacts, so that fluid fed to one end of the cable assembly can pass down a pipe, through the connector to the next pipe and so on and so that, at each connector, dielectric fluid can pass to the area of the contacts, whereby the contacts of each of the connectors can be flushed with fluid before use and, when in use, are immersed in dielectric fluid.

5,007,853

CASING SYSTEM FOR THE LAYING OF ELECTRICAL SUPPLY CONDUCTORS

Axel Olsen, Fjordskraenten 7, Graese Bakkeby, Frederikssund 3600, Denmark

Continuation-in-part of Ser. No. 254,798, Oct. 4, 1988, abandoned. This application Feb. 21, 1990, Ser. No. 483,983
Claims priority, application Denmark, Feb. 19, 1987, 847/87
Int. Cl.[5] H01R *4/64*
U.S. Cl. 439—211 **12 Claims**



1. A casing system for laying electric supply conductors and, if desired, signal conductors along the outer surface of walls of buildings, comprising

unitary elongated casing sections of insulating material and of a variety of fixed lengths, each such section having a front wall and a rear wall and at least two longitudinal cavities extending from end to end of the section in positions mutually displaced in a transverse direction parallel to said front wall,

an electric supply conductor being mounted in each of at least two such longitudinal cavities at a loose fit and being held therein against longitudinal displacement,

each casing section being constructed with a number of access modules distributed over the length of the section and each providing access for the touch and creep proof connection of outer conductors or installation components from the front side of the casing section to the supply conductors in the longitudinal cavities,

sliding cover sections profiled for positive sliding engagement with said casing sections and having a shape and a length such as to be capable of covering a gap of substantial length between two aligned casing sections,

corner sections having two legs disposed at an angle to each other, and end sections having one leg, each leg being shaped for positive sliding engagement with a sliding cover section in such a manner as to define a confined space between the sliding cover and the leg and to be capable of covering a gap of substantial length between the leg considered and the end of an aligned casing section,

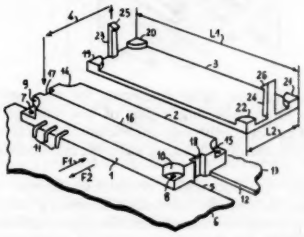
said sliding cover sections being constructed for fixation relative to a wall of a building along which one or more casing sections are mounted.

5,007,854

LOCKING DEVICE FOR CONNECTORS OF PRINTED CIRCUIT BOARDS

Giampietro Crespiatico, Via Dell'Aprica 26, 20158 Milano, and Luciano Mondori, Via A. Righi 4, 20082 Binasco (MI), both of Italy

Filed May 8, 1990, Ser. No. 520,688
Claims priority, application Italy, Jun. 8, 1989, 20812 A/89
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—367 **1 Claim**



1. The combination comprising a pair of connectors for printed circuit boards and a related locking device, each of said connectors:

(A) being shaped as a rectangular parallelepiped having a length, a width and a height,

each of said connectors having:

(B) an insertion face disposed perpendicular to said width,
(C) a lower surface for fixing to a printed circuit board, said lower surface being disposed perpendicular to said height,
(D) an upper surface opposite said lower surface, and
(E) a pair of angular recesses located on said upper surface at the two corners of said parallelepiped opposite to said insertion face,

said pair of connectors being:

(F) coupled by mating of the respective insertion faces

said locking device comprising:

(G) a rectangular, elongated plate having:
(1) a length equal to the length of said connectors,
(2) a width equal to the encumbrance of a coupled pair of said connectors in the direction of said connector width,
(3) upper and lower faces,
(4) a tenon at each of its corners protruding from said lower face, and
(5) two end arms situated intermediate the width of said plate and extending perpendicularly therefrom in the same direction as said tenons, each of said arms ending in a locking tooth, and

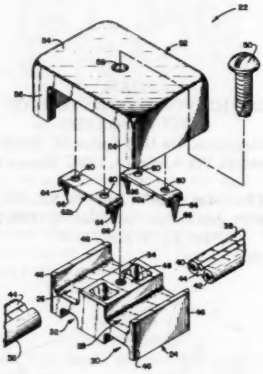
(H) said plate being overlapped to said coupled connectors with its lower face overlaying said upper surfaces of said connectors, said tenons being inserted in said connector recesses and said end arms locking, with their respective teeth, said plate to said coupled connectors, thereby preventing disconnection of said coupled connectors and removal of said plate from said coupled connectors.

5,007,855

CABLE CONNECTOR

Steven T. O'Brien, Champlin, and Jay J. Kakuk, Plymouth, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Jun. 20, 1990, Ser. No. 542,491
Int. Cl.[5] H01R 4/24
U.S. Cl. 439—411 3 Claims



1. A low voltage cable connector for mechanically and electrically interconnecting a pair of low voltage electrical cables, said cables comprising electrically conductive material encased in electrically insulating material, said connector comprising:

(a) a pair of electrically conductive jumper elements, wherein each of said elements comprises a pair of spaced sharp protrusions wherein said sharp protrusions are electrically connected;

(b) a cap comprising electrically resistive material with means for engaging said electrically conductive jumper elements;

(c) a base comprising electrically resistive material with a plurality of channel-like cavities for accepting said electrical cables and wherein said base is sized so as to nest within said cap and wherein said cavities on said base are positioned so as to receive said protrusions such that said cables are penetrated by said protrusions when said base nests within said cap; and

(d) fastening means for retaining said cap to said base wherein said protrusions penetrate said insulating material and make electrical contact with said conductive material of said cables, wherein said base comprises a generally rectangular-like cross section and wherein said base comprises four said cavities,two of said cavities of equal width and depth for accepting cable of equal size, extending parallel to each other on one side of said base, and two of said cavities of unequal width and depth for accepting cable of unequal size extending off-parallel to each other along opposite side of said base; and wherein said base nests within said cap so that either set of said cavities will receive said protrusions of said elements engaged in said cap.

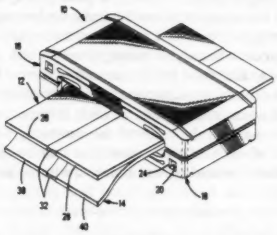
5,007,856

HOUSING FOR AN ELECTRICAL CONNECTION

Dean A. Puerner, Maricopa, Ariz., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 21, 1989, Ser. No. 454,259
Int. Cl.[5] H01R 13/58
U.S. Cl. 439—452 6 Claims

1. A housing means for enclosing a termination site of flat electrical cable of substantial width and defining a substantially wide exit for the cable from the site, comprising first and second housing members securable together about the termination site, at least one of said housing members including a resilient cable-clamping means integral therewith, said cable-clamping means being opposed from a cable-engaging portion of the other said cover member for firmly clamping major side surfaces of at least a first said cable extending from said termination site and defining a cable exit, each said first cable-clamping means including a cable-engaging platform having a cable-remote base portion joined by deformable hinges to side portions of said cover member laterally to each side of said cable exit, said cable-remote base portion being deflectable normally outwardly against spring bias into a relief slot therebehind upon said cover members being urged together and clamping against said cable major surfaces, the deflection resulting from elastic deformation of said hinges, providing insulative structure generally closing off the aperture but adjustable to variations in cable thickness at said first cable exit of the interconnection and providing vibration resistance for at least a limited range of cable thicknesses at the cable exit.

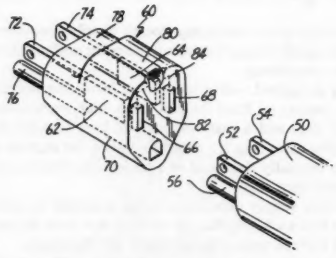


5,007,857

ELECTRICAL RECEPTACLE WITH POWER INDICATOR LIGHT

Duane E. Wright, R.R. 1 - Box 33A, Maddock, N. Dak. 58348

Filed Jul. 30, 1990, Ser. No. 559,653
Int. Cl.[5] H01R 3/00
U.S. Cl. 439—490 14 Claims



1. A unitary electrical receptacle configured for electrical connection with an electrical male plug having a pair of contact blades, the receptacle comprising:

a first pair of receptacle contacts configured for electrical connection with the pair of contact blades;

a second pair of receptacle contacts electrically insulated from the first pair of receptacle contacts and configured for making electrical connection with the first pair of receptacle contacts through the pair of contact blades when the pair of contact blades are electrically connected to the first pair of receptacle contacts; and

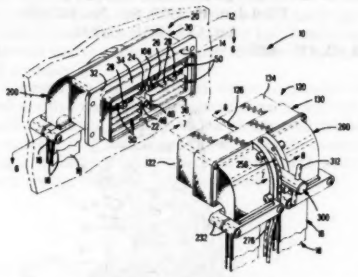
a lamp electrically connected in series between the second pair of receptacle contacts and adapted for interconnection to the first pair of receptacle contacts when the male plug is inserted into the receptacle.

5,007,858

ELECTRICAL CONNECTOR FOR FLAT POWER CABLE

John K. Daly, Scottsdale; Earl R. Kreinberg, Phoenix; Dean A. Puerner, Maricopa, and Marty E. Adcock, Scottsdale, all of Ariz., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 20, 1990, Ser. No. 511,662
Int. Cl.[5] H01R *13/533, 9/07*
U.S. Cl. 439—498 15 Claims



1. A connector for use with a plurality of flat cables each including at least one flat conductor of substantial width and incremental thickness, the connector being suitable for housing terminations to respective ones of the cable conductors for transmission of electrical power at substantial levels of current and voltage across a mating interface, the terminations extending laterally across the width of respective ones of the flat cables, comprising:

a shell member including at least one housing-receiving cavity extending from a rearward shell face to a front face through a transverse body section of substantial bulk material having good heat transfer properties, each said housing-receiving cavity being defined by wall sections of said shell member;

dielectric means including respective cavity means to house an end of each said flat cable to which is terminated a respective terminal means defining a termination, each said terminal means including contact sections extending forwardly into forward cavity means of said dielectric means for mating with a corresponding contact means of a mating electrical article, each said termination extending laterally across the width of the respective said flat cable and having major upper and lower surfaces, and each said dielectric means including an outwardly facing wall of limited thickness along one of said major upper and lower surfaces of each said termination therein; and

each said dielectric means containing said at least one termination being retained within said shell member and disposed within a respective said housing-receiving cavity such that at least one said cavity wall section coextends along and adjacent said wall of said dielectric means along said one of said major upper and lower surfaces of each said termination such that said wall section of said shell member is proximate said one of said major upper and lower surfaces of each said termination and defines a heat transfer system for dissipating heat from each said termination during in-service use.

5,007,859

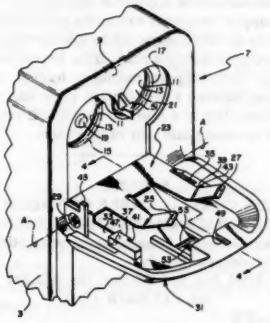
BATTERY-CONTAINING APPARATUS

Jude A. Sangregory, Spencerport, and Anthony DiRisio, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 16, 1990, Ser. No. 465,670
Int. Cl.[5] H01R *3/00*
U.S. Cl. 439—500 4 Claims

1. A battery-containing apparatus comprising a body portion defining a chamber having an opening for inserting at least one battery into said chamber, a door, mounting means supporting said door for pivotal movement relative to said chamber between a closed position covering said opening and an open position for uncovering the opening and for translational movement relative to the chamber in the closed position between a latched position for securing the door closed and an unlatched position for allowing the door to be opened, and a contact carrier including an electrically conductive contact for making electrical connection with a corresponding contact of the battery, characterized in that:

said mounting means includes cooperating means located on said body portion, said door, and said contact carrier for supporting the contact carrier for pivotal movement with



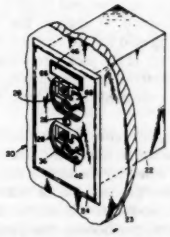
the door between the closed and open positions, to electrically connect said conductive contact of the contact carrier and the corresponding contact of the battery when the door is pivoted to its closed position and to disconnect the two contacts when the door is pivoted to its open position, and furthermore for supporting the door in its closed position for translational movement relative to the contact carrier between the latched and unlatched positions, to maintain the conductive contact of the contact carrier and the corresponding contact of the battery in fixed stationary relation when the door is translated in its closed position from its unlatched position to its latched position.

5,007,860

MODULAR HIGHER DENSITY COMMUNICATIONS COUPLING SYSTEM

Scott T. Robinson, Redmond; William K. Denning, Everett; John M. Redfield, Brier, and John H. Garthwaite, Coupeville, all of Wash., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Jan. 19, 1990, Ser. No. 463,328
Int. Cl.[5] H01R *13/60*
U.S. Cl. 439—540 16 Claims



1. A telecommunications coupling device for mounting a pair of connectors through a single industry standard-sized hole, comprising:

a main body member;

a registration ridge extending forward from said main body member, at least a first portion of said ridge being adapted to extend into said hole to align said main body member with respect to said hole;

a pair of apertures through said main body member, and adjacent each other, said pair of apertures being generally surrounded by said registration ridge for alignment of both apertures with said hole;

a pair of retaining members extending rearwardly from said main body member, adjacent to said apertures, said retaining members being adapted to retain a pair of connector housings for supporting said respective connector in alignment with said respective apertures to permit coupling to a telecommunication apparatus; and

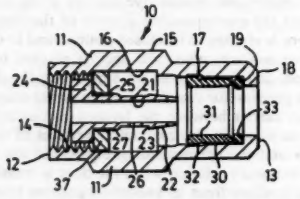
a pair of support members extending rearwardly from said main body member, adjacent to said apertures, said support members extending rearwardly beyond said retaining members, said support members having slots therein adapted to receive a termination plate and support said termination plate in a position above said retaining members and spanning said pair of apertures.

5,007,861

CRIMPLESS COAXIAL CABLE CONNECTOR WITH PULL BACK CABLE ENGAGEMENT

Albert Stirling, Gormley, Canada, assignor to Stirling Connectors Inc., Markham, Canada

Filed Jun. 1, 1990, Ser. No. 532,292
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—578 **12 Claims**



1. A connector for use with a coaxial cable of the type having a core with a central wire conductor and a foil conductor and having a deformable outer insulating jacket, said connector also being for use with a threaded coupling unit, said connector comprising:

a generally cylindrical body open at both ends, having a threaded portion at one end engageable with said coupling unit, and at the other end being adapted to receive said cable;

a rigid bushing with a bore of a diameter to closely receive said cable, mounted within said body proximal to said other end thereof;

an annular mandrel with a bore of a diameter to closely receive said core of said cable, slidably housed within said body proximal to said one end thereof, said mandrel having a sleeve adapted to engage the cable beneath said jacket, contacting said foil, to thereby stretch and increase the outer diameter of the jacket to a diameter greater than the internal diameter of the bushing, the sleeve being engageable with the cable by pushing the mandrel and the cable together;

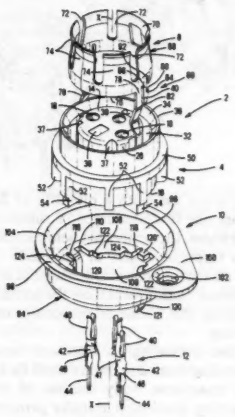
said mandrel being movable longitudinally within said body from a first position in which the sleeve is not surrounded by the bushing whereby the sleeve may be engaged to the cable, to a second position via an intermediate position in both of which positions the sleeve is at least partially within the bushing whereby the jacket frictionally engages the bushing to retain the cable in the connector the mandrel being displaced to the intermediate position by pulling the cable away from the connector after engagement of the cable with the mandrel, and the mandrel being displaced to the second position by screwing the connector onto the coupling unit.

5,007,862

SHIELDED CONNECTOR HAVING A MULTIPLY ORIENTABLE HOUSING

George R. Defibaugh, Mechanicsburg; Earl C. Myers, Jr., Harrisburg, and Steven G. Smith, Linglestown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 15, 1990, Ser. No. 540,678
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—607 **17 Claims**



1. A circular cross section electrical connector for mounting in a position on a circuit board, the connector comprising;

a dielectric housing having a mating first end face and a second end face opposite thereto, a plurality of electrical terminal receiving cavities each opening into both of said faces and at least one housing orienting lug projecting from said second end face proximate to the radially outer periphery thereof;

an electrical terminal retained in each cavity and having a contact tail projecting from said second end face substantially normally thereof for insertion into a hole in the circuit board and a mating portion extending in the opposite direction to said tail; and

an outer metal shield having a peripheral wall defining a seat for receiving said housing with said second face thereof leading, a rudimentary wall projecting radially inwardly from the peripheral wall and defining a central hole for the passage of said contact tails therethrough, a plurality of openings being distributed in spaced relationship circumferentially of said rudimentary wall, in each of which openings said at least one orienting lug is selective engagable in order- to select the angular orientation of said dielectric housing with respect to said outer metal shield.

5,007,863

MODULE-TYPE MULTI-FUNCTION ELECTRICAL POWER ADAPTER FOR AUTOMOBILES AND THE LIKE

Jialuo Xuan, 914 Sherman Ave., #2F, Evanston, Ill. 60202

Filed Sep. 17, 1990, Ser. No. 583,689
Int. Cl.[5] H01R *25/00*
U.S. Cl. 439—639 **3 Claims**

1. A module-type multi-function electrical power adapter, for use with electrical cigarette lighter socket in automobiles and boats, which comprises:

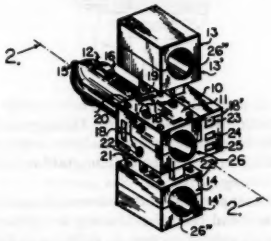
a master module and additional modules, each provides a socket for accommodating one accessory, said master

module having cylindrical extender insertable into the cigarette lighter socket and constructed to receive the two-prong power connection; said additional modules able to be attached to the said master module; each additional module also be able to receive another module; and

housing means defining a plastic bottom half portion and a plastic top half portion, both having stepped edges for rigid combination by screws, forming a narrow round slot to hold a cylindrical wall element or socket for both said master module and said additional modules;

insulator means having ring shape to mount on a small end of said wall element to insulate a negative lead from a positive central lead in either said master module or said additional modules;

insulator means having cylindrical shape to insulate the central positive contact from outside negative contact in the said cylindrical extender of the said master module; having an enlarged outside end to hold a negative contact, having a cylindrical inner space to hold said positive contact, spring, electrical fuse, and spacing block;



positioning hole means on sides of the said master module, having rectangular shape to receive positioning pins with correct sizes from said additional module;

positioning pin means on the said additional module being able to match the said positioning holes on the said master module;

receiving ring means on sides of said master module, having side portions being punched inwardly to keep tight tough with inserting power connecting legs from said additional module, having one end to be riveted onto the said master module;

power connecting leg means on said additional module having cylindrical shape and shorter than said positioning pins to ensure correct power connection, having one end to be riveted onto the said additional module;

power lead means having ring-shaped ends to be inserted into a slot on said wall element or put under said power connecting legs or said receiving rings for easy assembly without welding;

inner structure means of the said master module having space for a printed-circuit board mounted by a central screw.

5,007,864

DEVICE FOR ADAPTING A PACEMAKER LEAD TO A PACEMAKER

William H. Stutz, Jr., Burbank, Calif., assignor to Siemens-Pacesetter, Inc., Sylmar, Calif.

Filed Nov. 27, 1989, Ser. No. 441,844

Int. Cl.[5] H01R *25/00*

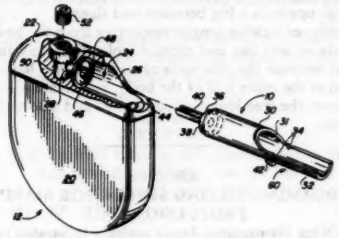
U.S. Cl. 439—651 **28 Claims**

1. An adapter for use in a coping a generally cylindrical terminal electrode assembly to a device having a jack for receiving the assembly, the terminal electrode assembly being undersized relative to the dimensions of the jack, the adapter comprising:

a thin-walled tubular portion defining a hollow bore terminating in an end wall at a distal end thereof and an entry opening at a proximal end thereof, the outer diameter of the tubular portion being selected to match the inner diameter of the jack, the diameter of the tubular portion being selected to match the outer diameter of the terminal electrode assembly;

means for releasably latching the adapter within the jack of the device;

means for releasing the latching means and withdrawing the adapter from the jack, wherein the releasing and withdrawing means is detachable from the adapter; and



wherein the releasing and withdrawing means further comprises:

a tab extending from one side of the tubular portion outwardly past the entry opening; and

means defining a pair of notches located to establish a separation point to facilitate breaking off the tab from the tubular portion.

5,007,865

ELECTRICAL RECEPTACLE TERMINAL

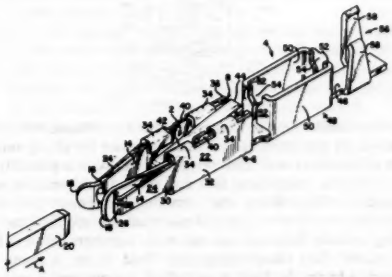
Erich D. Jakobeit, Ruesselsheim, Fed. Rep. of Germany, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 26, 1990, Ser. No. 498,874

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1987, 8713038[U]

Int. Cl.[5] H01R *4/48*

U.S. Cl. 439—839 **5 Claims**



1. A stamped and formed electrical terminal comprising a receptacle portion, a wire connecting portion and a backing spring portion, the receptacle portion comprising a channel shaped body having a base and a pair of side walls upstanding from opposite edges of the base, a pair of cantilever contact springs projecting in juxtaposed relationship, each from a respective side all at one end of the body, each contact spring having a bowed contact surface proximate to its free end, said contact surfaces being bowed towards each other to receive a male contact element between them the wire connecting portion extending from the other end of the body, the backing spring portion comprising a backing spring support secured to the body and from which project a pair of cantilever backing springs resiliently restraining movement of the contact springs away from each other, each backing spring having a free end portion projecting substantially normally thereof and having a

free end engaging the respective contact spring at a position opposite to its contact surface; characterized in that the backing spring support is also channel shaped and receives the body of the receptacle portion, said support having a base superposed with the base of the body and side walls each of which is substantially parallel to a side wall of the body, a pair of flanges projecting from the free longitudinal edge of each side wall of the backing spring support and being spaced from each other longitudinally of said free longitudinal edge and engaging a free edge of a respective side wall of the body from which free edge upstands a lug between said flanges,

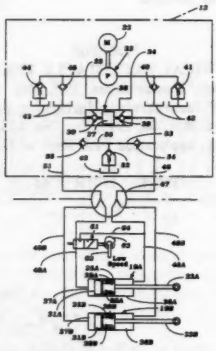
a cantilever locking tongue projecting from the base of said body at said one end thereof, obliquely away therefrom and between the side walls of said body and having a free end at the other end of the body, proximate to, but lying above, the free longitudinal edge of said side walls of the body.

5,007,866

TRIMMING/TILTING SYSTEM FOR MARINE PROPULSION UNIT

Ryozo Okita, Hamamatsu, Japan, assignor to Sanshin Industries Co., Ltd., Hamamatsu, Japan

Filed Oct. 4, 1989, Ser. No. 416,865
Claims priority, application Japan, Oct. 4, 1988, 63-250306
Int. Cl.[5] B63H *21/26*
U.S. Cl. 440—61 **9 Claims**



1. A hydraulic tilt and trim system for an outboard drive unit mounted on the transom of a marine vessel for tilting movement of the drive unit and movement between a plurality of trim positions, comprising first and second fluid motors each adapted to effect tilting and trimming movement and each connected to said drive unit and said transom, said fluid motors having cylinder housings and moveable members defining first and second fluid chambers in each fluid motor, a pump for delivering hydraulic fluid to said fluid motors, and a selector valve for effecting quick tilting-up movement of the drive unit by permitting hydraulic fluid to flow to only one of said fluid motors and for effecting slow trimming movement of the drive unit between a plurality of trim positions by permitting hydraulic fluid to flow simultaneously to both of said fluid motors.

5,007,867

WEED RING FOR TROLLING MOTOR

Michael P. Kelley, Broken Arrow, Okla., assignor to Zebco Corporation, Tulsa, Okla.

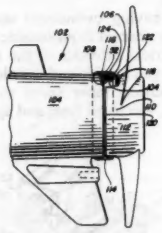
Filed May 16, 1989, Ser. No. 352,570
Int. Cl.[5] B63H *5/16*
U.S. Cl. 440—71 **12 Claims**

12. An improved trolling motor of the type having a propeller, a housing with axially spaced leading and trailing ends, a shaft carrying the propeller and journalled for rotation in the housing, and means for rotatably driving the shaft and propeller, the improvement comprising:

said housing trailing end having an outer, radially outwardly facing surface and an annular radially inwardly facing surface;

said propeller having a hub with an annular radially outwardly facing outer surface to which a plurality of blades are attached; and

cooperating means on the housing, shaft and propeller for mounting the propeller with respect to the housing so that the radially inwardly facing housing surface is radially



outside of, in axially overlapping relationship with, and in close proximity to, the outwardly facing propeller surface,

wherein the cooperating means includes a strip attached to the housing outer surface defining said radially inwardly facing housing surface,

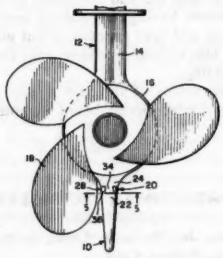
wherein at least portions of the outer surfaces of the housing trailing end and propeller housing are spaced from each other in an axial direction to define a radially opening space and the strip overlaps the radially opening space so that the radially opening space is completely blocked in a radial direction by said strip over substantially the entire circumferential extend of the radially opening space.

5,007,868

REPLACEABLE SKEG FOR A MARINE PROPULSION DEVICE

Trenton Fry, Northland Lodge, Orr, Minn. 55771

Filed Jan. 22, 1990, Ser. No. 468,254
Int. Cl.[5] B63H *5/16*
U.S. Cl. 440—071 **2 Claims**



1. A replaceable skeg for a marine propulsion device of the type having a drive shaft housing, a gear case housing fixed, to the bottom end of the drive shaft housing and rotatably mounted propelling element on the rear end of the gear case housing, said skeg comprising a means for removably connecting the top of said skeg to the lower portion of the gear case housing so that when said skeg is hit by an underwater obstruction, said skeg will fracture at said removable connecting means and break away, leaving the lower portion of the gear case housing intact and undamaged in which another said skeg can be installed thereto,

wherein said removable connecting means includes a dove-

tail tongue and groove joint between the top of said skeg and the lower portion of the gear case housing, and wherein said dovetail tongue and groove joint is tapered, being wider at the leading edge and narrower at the trailing edge of the top of said skeg and the lower portion of the gear case housing to ensure a tight fit for said skeg.

5,007,869

PROP-SAVER (PROPELLER GUARD DEVICE)

Allen W. Zoellner, P.O. Box 283, Topock, Ariz. 86436

Continuation-in-part of Ser. No. 492,960, Mar. 13, 1990, abandoned. This application Jul. 19, 1990, Ser. No. 555,373

Int. Cl.[5] B63H *5/16*

U.S. Cl. 440—71 **3 Claims**

1. A propeller guard for mounting on the lowermost portion of a skeg of a marine drive having propeller blades, said guard comprising an oval shaped sleeve with a vertical longitudinal axis, a top and a bottom, said top being open as to allow the sleeve to be slipped over said skeg, said guard further comprising a generally flat fin attached to and closing said bottom of said sleeve, with said fin having an angle of pitch of 3 to 5 degrees to said vertical longitudinal axis of said sleeve and extending downward and rearwardly, said fin having a trailing edge at least as wide as the circumference of the rotational path of said propeller blades and said guard further comprising means for readily attaching and detaching said sleeve to said skeg.

5,007,870

JET PROPULSION CRAFT PROVIDED WITH EXHAUST NOISE ELIMINATING APPARATUS

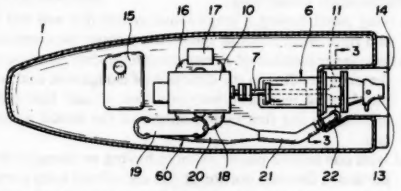
Susumu Okubo, and Yutaka Sasaki, both of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Kamimura, Japan

Filed Jun. 21, 1989, Ser. No. 369,174

Claims priority, application Japan, Jul. 6, 1988, 63-166933

Int. Cl.[5] B63H *21/32*

U.S. Cl. 440—89 **15 Claims**



1. A jet propulsion craft for propulsion upon a water surface, comprising:

a hull structure generally comprising a bottom plate and an upper plate;

an engine mounted upon said bottom plate at substantially a middle portion of said hull structure as considered in the longitudinal direction thereof, said engine being provided with an exhaust port;

an exhaust system extending rearwardly from said engine and provided with an inlet end and an outlet end, said inlet end being operatively connected to said engine exhaust port;

a jet pump mounted upon said bottom plate at a rear portion of said hull structure and driven by said engine, said jet pump being adapted to ingest water and to exhaust said ingested water outwardly as a water jet from a jet nozzle for propelling said jet propulsion craft with respect to said water surface;

an exhaust gas noise eliminating means operatively connected to said outlet end of said exhaust system and mounted upon a rear portion of said hull within the vicinity of said jet nozzle for eliminating said exhaust gas noise; and

an exhaust gas discharging port operatively connected to said exhaust gas noise eliminating means for discharging said exhaust gas at reduced noise levels.

5,007,871

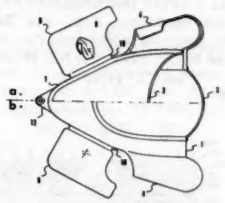
DIVE-PLANE

William R. Dyer, 4517 126th St. SE., Everett, Wash. 98208

Filed Jul. 31, 1989, Ser. No. 387,588

Int. Cl.[5] A63C *15/00*

U.S. Cl. 441—65 **7 Claims**



1. An aquatic dive plane device for under water search and exploration, comprising:

(a) a body of buoyant plastic material to float said dive plane device, said body being shaped such that it has a generally pointed, closed front end and rearwardly extending, spaced apart side portions having both inside and outside edges, said side portions being of predetermined length and defining an open operator area therebetween and rearwardly of said front end,

(b) arm support means attached to each of said side portions on the outside edge thereof,

(c) a wing member made of buoyant plastic material affixed to the outer edge of each side portion forwardly of said arm support means, said wing members having top and bottom surfaces and being affixed along said outer edge by hinge means for limited up and down movement,

(d) handle means detachable secured to the top surface of each of said wing members to be grasped by the operator for control of said wing members and said dive plane device and

(e) Upper an lower semi-parabolic transparent fairing means removably attached to said body.

5,007,872

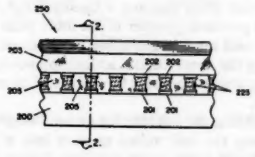
SCREENED INTERCONNECT SYSTEM

Sang T. Tang, Pomona, Calif., assignor to Babcock Display Products, Inc., Anaheim, Calif.

Filed Jun. 12, 1989, Ser. No. 364,629

Int. Cl.[5] H01J *9/00*

U.S. Cl. 445—25 **15 Claims**



1. An interconnect system for electrically interconnecting electrical conductors on parallel plates comprising,

first and second planar plates of substantially electrically non-conducting material,

a plurality of closely spaced conductor paths on a surface of each of said first and second planar plates,

said conductor paths are on the order of 0.5 mm wide with spacing on the order of 0.5 mm therebetween,

said first and second planar plates arranged in parallel, spaced apart relation with the plurality of conductor paths on said first planar plate in alignment with the plurality of conductor paths on said second planar plate, and

independent and unsupported interconnections formed of a conductive material having substantially the same thermal coefficiently of thermal expansion as said first and second planar plates and joined to the aligned conductor paths on said first and second planar plates in order to electrically interconnect said aligned conductor paths.

5,007,873

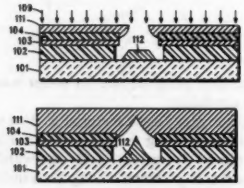
NON-PLANAR FIELD EMISSION DEVICE HAVING AN EMITTER FORMED WITH A SUBSTANTIALLY NORMAL VAPOR DEPOSITION PROCESS

Herbert Goronkin, Scottsdale, Ariz., and Robert C. Kane, Woodstock, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 9, 1990, Ser. No. 477,694

Int. Cl.[5] H01J *9/02*

U.S. Cl. 445—49 **20 Claims**



1. A method of forming a substantially non-planar cold-cathode field emission device, comprising the steps of:

(a) providing a body having a cavity formed therein;

(b) forming an emitter within the cavity through use only of a substantially, but not absolutely, normal encapsulated by build up of material deposited onto the body at the edge of the cavity through said substantially normal vapor deposition process.

5,007,874

METHOD OF MAKING A CATHODE FROM TUNGSTEN AND IRIDIUM POWDERS USING A REACTION PRODUCT FROM REACTING A GROUP III A METAL WITH BARIUM PEROXIDE AS AN IMPREGNANT

Louis E. Branovich, Howell; Donald W. Eckart, Wall; Bernard Smith, Ocean, and Gerard Freeman, Freehold, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 15, 1990, Ser. No. 597,637

Int. Cl.[5] H01J *9/04*

U.S. Cl. 445—50 **9 Claims**

1. Method of making a cathode for operation in microwave devices from tungsten and iridium powders using a reaction product formed from reacting a Group III A metal powder with barium peroxide powder in the mole ratio of 2 to 3 as an impregnant, said method including the steps of

(A) mixing the tungsten and iridium powders,

(B) adding about 2 percent by weight of an activator to the mixture,

(C) ball milling the mixture for about 8 hours,

(D) pressing the ball milled mixture into a billet at about 48,000 psi in a die,

(E) sintering the billet at about 1800° C. for about thirty minutes in dry hydrogen of less than −100 dewpoint,

(F) backfilling the billet with copper in dry hydrogen at about 1500° C.,

(G) machining the billet to the desired geometry,

(H) removing the copper by etching in nitric acid,

(I) thoroughly rinsing in deionized water, methanol and then drying,

(J) firing the billet in dry hydrogen at about 140° C. for about 15 minutes,

(K) impregnating the billet with reaction product formed from reacting a Group III A metal powder with barium peroxide powder in the mole ratio of 2 to 3 by firing the billet in a dry hydrogen furnace at a temperature at which the impregnant melts for about two minutes.

(L) removing the billet from the furnace after the furnace is cooled, and

(M) removing any loose pieces of impregnant from the billet.

5,007,875

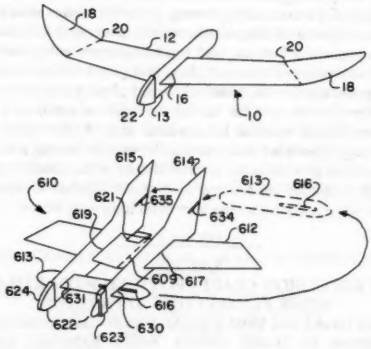
MULTIPLE CONFIGURATION MODEL AIRCRAFT

Madhava Dasa, P.O. Box 461, Kula, Hi. 96790-0461

Filed Oct. 2, 1987, Ser. No. 103,954

Int. Cl.[5] A63H *27/18*

U.S. Cl. 446—66 **4 Claims**



1. A model aircraft kit including constituent parts which are adapted to be assemblied together in connected relation in differing model aircraft configurations providing correspondingly different model aircraft appearances and aerodynamic characteristics, comprising:

a wing panel having a longitudinal center line and and left and right wing portions symmetrical about the centerline;

a first planar member of elongate configuration having a slot therein extending in the direction of elongation, said wing panel being insertable into said slot of said first planar member in the first configuration of the model aircraft; and

at least one second planar member having an elongate body portion, a first end portion at one end of said body portion and a second, enlarged end portion at the opposite end of said body portion, said second planar member also having a first slot in said body portion thereof extending in the direction of elongation and of such length in said body portion thereof extending in the direction of elongation and of such length as to receive said wing panel, and a third slot in said second end portion, said wing panel being insertable into said second slot in the second and third configurations of the model aircraft and said first planar member being insertable into said first slot in the second configuration thereof and into said third slot in the third configuration thereof.

5,007,876

BANKED HAIRPIN MARBLE RACE TOY

Daniel B. Klitsner, San Francisco, Calif., assignor to Discovery Toys, Inc., Martinez, Calif.

Filed Jul. 1, 1988, Ser. No. 214,243
Int. Cl.[5] A63H *29/08*; A63F *9/14*
U.S. Cl. 446—168 20 Claims

1. A marble race toy for use with a marble race game of the type in which a marble moves along a tortuous path comprising:

a marble track having an entrance and an exit;

the track including a first portion, having first and second ends, sloping downwardly from the entrance, a second portion, having third and fourth ends, sloping upwardly from the second end, a third portion, having fifth and sixth ends, sloping downwardly from the fourth end, and a U-shaped track portion, coupling the fourth and fifth ends, which generally reverses the direction of the marble;

the first end being adjacent the entrance;

the sixth end being adjacent the exit;

the first and second portions forming a smoothly curving track portion together defining a vertically oriented flat plane;

the second and third portions being juxtaposed, generally parallel to one another, and having a common wall therebetween dividing the second and third portions;

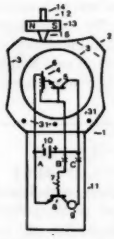
the first, second, third, fourth, fifth and sixth ends being at first through sixth elevations, the first elevation being above the fourth and fifth elevations which are above the second, third and sixth elevations.

5,007,877

NOVELTY MAGNETIC TOP

Thomas A. Watson, 2358 Workman St., Montreal, Quebec, Canada H3J 1L6

Filed Jan. 16, 1990, Ser. No. 468,131
Int. Cl.[5] A63H *1/02*
U.S. Cl. 446—242 9 Claims



1. A novelty magnetic toy having a stator coil and an electric circuit, a magnetic top, supporting means for the top in close proximity to and externally of the coil for supporting the top for rotation relative to and external of the coil, a source of electric potential in the electric circuit and means in the electric circuit operable by the coil current induced by rotation of the magnetic top for momentarily connecting the source of electric potential across the coil to momentarily impose a magnetic field on the magnetic top to accelerate rotation thereof, the supporting means mounted externally on a head which contains the coil, a shank connected to the head, wherein the shank is arranged to form a handle.

5,007,878

PROCESS FOR CALIBRATION OF STANDARDIZATION OF NATURAL INTESTINES

Peter A. Klöpping, An der Alster 3, D-2000 Hamburg 1, Fed. Rep. of Germany

Filed Dec. 4, 1989, Ser. No. 444,874
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1988, 3841808
Int. Cl.[5] A22C *11/00*
U.S. Cl. 452—198 5 Claims

1. A process for the calibration or standardization of natural intestines for use as skins for foods and the like, comprising:

placing the natural intestines around a carrier having a desired caliber; and

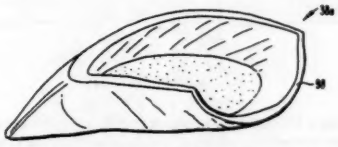
subjecting the natural intestines to a microwave field.

5,007,879

DOG CHEW PROCESSING METHOD

Richard L. Lawson, 3272 N. Greenwood, Sanger, Calif. 93657

Continuation of Ser. No. 443,457, Nov. 29, 1989, Pat. No. 4,985,964. This application Oct. 12, 1990, Ser. No. 596,276
Int. Cl.[5] A22C *17/00*
U.S. Cl. 452—198 9 Claims



1. A method for processing a hoof for use as a pet chew, the hoof having a bottom and an upper edge, comprising the following steps:

cleaning the hoof;

removing a portion of the bottom of the hoof, the portion having a thickness; and

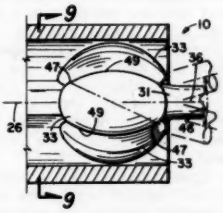
limiting the thickness of said portion so as not to create a hole in the bottom of the hoof.

5,007,880

BEVEL SPLINED ARTICULATED JOINT

Stanley L. Walker, Rte. 4, Box 13, Eureka Springs, Ark. 72632

Filed May 9, 1990, Ser. No. 521,231
Int. Cl.[5] F16D *3/18*
U.S. Cl. 464—159 8 Claims



1. A joint articulable to a maximum predetermined angle ϕ comprising:

a cylindrical socket having a major inner diameter complimentary to a predetermined diameter 'd' and a preselected number 'n', at least three, longitudinal internal splines

integrally and uniformly extending inwardly from said major diameter and centered on planes cyclically angularly disposed through a longitudinal axis of said socket;

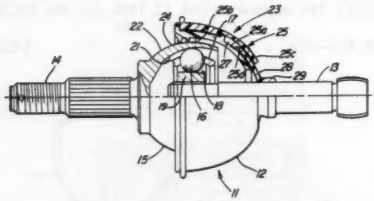
a ball having a preselected number 'n', at least three, of external splines integrally outwardly extending from said ball, said splines being centered on planes cyclically angularly disposed through a longitudinal axis of said ball and having an exterior surface defined by rotation of a circular arc about said ball axis, said arc having a radius 'r_{spline}'$=d(1-\text{Tan}\ \phi/2)$ and said arc point of origin being spaced from said axis by a distance 'x_{spline}'$=d(0.50-\text{Tan}\ \phi/2)$, said external splines having exterior edges, said exterior edges of adjacent external splines being spaced at a constant distance and said external splines being meshably insertable between said internal splines when said ball and socket longitudinal axes are aligned.

5,007,881

MULTI-COMPONENT, MULTI-SEGMENT, NON-FLEXIBLE BOOT FOR MECHANICAL JOINT

Daniel W. Hazebrook, Detroit, Mich., assignor to GKN Automotive, Inc., Auburn Hills, Mich.

Filed Feb. 24, 1986, Ser. No. 832,865
Int. Cl.[5] F16D 3/84
U.S. Cl. 464—171 **4 Claims**



1. A boot for sealing a power transmitting mechanical joint, said joint comprising an input shaft, an output shaft, an outer race connected to one of said input shaft and said output shaft, and means to transmit power from the other of said input shaft and output shaft to said outer race, said outer race having a spherical outer surface, said input shaft and said output shaft being subject to articulation relative to one another during the operation of said mechanical joint, said boot comprising:

a first boot segment formed by at least two separate concentrically mounted components, at least one of said at least two concentrically mounted components being an inner component, at least one other of said at least two concentrically mounted components being an outer component, said outer component being formed from a first semi-rigid material, said inner component being formed from a second semi-rigid material, said first semi-rigid material having a hardness greater than said second semi-rigid material, said inner component being mounted to said spherical outer surface of said outer race, said inner component further surrounding and sealing engaging a portion of said spherical outer surface of said outer race, said outer component having a first portion mounted contiguous said inner component and a second portion spaced a predetermined distance from said inner component to define a spherical groove therebetween, said spherical groove facing one of said input shaft and said output shaft, said first portion being capable of articulating with respect to said outer race without the loss of the sealing relationship therewith; and

a second boot segment formed from a semi-rigid material, said second boot segment having one end portion extended into said spherical groove defined by said inner and outer component of said first boot segment, said second boot segment further having an opposite end portion sealingly engaging the other of said input shaft and said output shaft, said one end portion further being sealing and slidingly received in said spherical groove of said first boot segment and being sealingly articulatable with respect to said first boot segment, said second boot segment together with said first boot segment, sealing the power transmitting mechanical joint between said outer race and the other of said input shaft and said output shaft to retain lubricant within said joint and to prevent dirt and other contaminants from entering said joint;

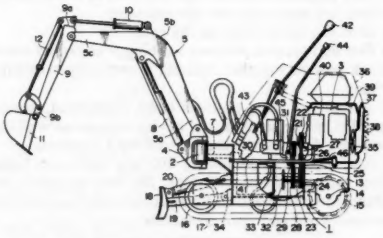
said spherical groove in said first boot segment having a predetermined length so that the articulation of said second boot segment with respect to said first boot segment causes said one end portion of said second boot segment to bottom in said spherical groove in said first boot segment, said boot being capable of further articulation by the articulation of said first boot segment with respect to said outer race of said power transmitting mechanical joint after said one end portion of said second boot segment bottoms in said spherical groove in said first boot segment.

5,007,882

BELT TRANSMISSION FOR VERY SMALL SIZE SHOVEL CAR

Takeshi Mizumoto, and Yoshiaki Murakami, both of Ehime, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 23, 1990, Ser. No. 555,650
Claims priority, application Japan, Aug. 7, 1989, 1-204167
Int. Cl.[5] F16H 7/00, 7/08
U.S. Cl. 474—84 **2 Claims**



1. A belt transmission for a very small size shovel car which includes an engine, a transmission case connected to said engine by way of said belt transmission for driving said shovel car to run, and a hydraulic pump for operating a working boom, comprising a first pulley mounted on an output shaft of said engine, a second pulley mounted on an input shaft of said transmission case, a first belt extending between and around said first and second pulleys, a belt tension clutch movable to and from an operative position in which it engages with said first belt to cause said first belt to transmit power from said first pulley to said second pulley, a third pulley also mounted on said input shaft of said transmission case, a fourth pulley mounted on an input shaft of said hydraulic pump, and a second belt extending between and around said third and fourth pulleys.

5,007,883

CHAIN-BELT

Edward H. Cole, Jr., Ithaca, and John D. Bilynsky, Auburn, both of N.Y., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Mar. 20, 1990, Ser. No. 496,833
Int. Cl.[5] F16G 5/16
U.S. Cl. 474—242 **13 Claims**

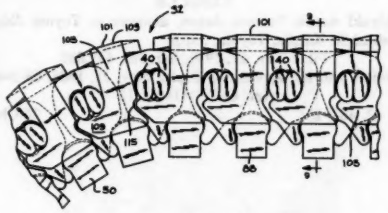
1. A power transmission (10) chain-belt (32) especially adaptable for connecting the pulleys (12, 14) of a pulley transmission (10) comprising:

a plurality of interleaved sets (34) of links (36), each set (34) having a plurality of transversely arranged links (36);

pivot means (40) joining said adjacent sets (34) of links (36) to form an endless loop;

at least one toe (42A, 42B) extending from each link (36) in at least some sets (34) of links (36), at least said toes (42A, 42B) on adjacent links (36) being in opposed relationship and said toes (42A, 42B) defining a passageway (80);

a plurality of load blocks (50) connected to said links (36), said load blocks (50) being positioned in said passageway (80) defined by said toes (42A, 42B), each load block (50) having edge surfaces (88) for contacting said pulleys (12, 14) of said transmission (10), and



a retainer bracket (101) positioned on each sets (34) of links (36), said retainer bracket (101) having a first section (103) that extends across the side of said links (36) that is in spaced apart, opposed relationship to said passageway (80) and a second section (105) that extends along the sides of said links (36), said retainer bracket (101) being held in place on said links (36) by said pivot means (40), said retainer bracket (10) contacting said ends of said load block (50) to restrain said load block (50) from movement transverse to the direction of travel of said chain-belt (32).

5,007,884

BELT FOR HIGH LOAD TRANSMISSION

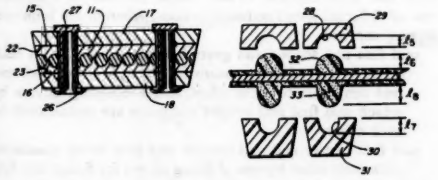
Takashi Masuda; Kengiro Hashimoto, both of Kobe; Shinichi Takagi, Nishinomiya, and Masayuki Tanaka, Kobe, all of Japan, assignors to Mitsuboshi Belting Ltd., Japan

Division of Ser. No. 235,162, Aug. 23, 1988. This application Jan. 9, 1990, Ser. No. 462,611

Claims priority, application Japan, Sep. 1, 1987, 62-133862

Int. Cl.[5] F16G *5/16, 1/22*

U.S. Cl. 474—242 **15 Claims**



1. In a power transmission belt for transmitting high loads, said belt including:

an elastomeric neutral belt defining an outer flat surface and an inner flat surface, said belt including longitudinally spaced outer and inner aligned projections having heights;

a tensile cord extending longitudinally in said neutral belt;

a plurality of pairs of aligned longitudinally, equally spaced first and second blocks adjacent said outer and inner surfaces respectively of said neutral belt, at least one of said blocks being provided with a recess for receiving one of said projections having a depth different than the height of said projection and surfaces for contacting a neutral belt flat surface, said blocks having an outer portion comprising thermoset synthetic resin material having friction-reducing fibers distributed therein; and

means for securing said blocks to said neutral belt, said securing means extending through said neutral belt and the aligned blocks to said outer and inner surfaces, said securing means comprising means for causing said surfaces of said one block to be compressed against a neutral belt flat surface,

whereby said belt flat surface and said surfaces of one said block are in clamped, high friction engagement.

5,007,885

DRIVING TORQUE TRANSMITTING DEVICE

Masaji Yamamoto; Shigeo Tanooka, both of Okazaki, and Toshifumi Sakai, Aichi, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

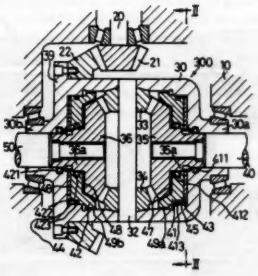
Continuation of Ser. No. 227,806, Aug. 3, 1988, abandoned. This application Dec. 19, 1989, Ser. No. 453,190

Claims priority, application Japan, Aug. 3, 1987, 62-193908; Aug. 19, 1987, 62-205550

The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.

Int. Cl.[5] F16H *1/44*

U.S. Cl. 475—231 **5 Claims**



1. A driving torque transmitting device for transmitting driving torque from a driving torque supply to two output shafts connected to wheels, comprising:

an input shaft rotatably supported on a housing to be rotated by said driving torque supply and provided with an input gear at its one end;

a cylindrical case body supported within said housing so as to be rotatable about a rotational axis perpendicular to the rotational axis of said input shaft and provided on its outer periphery with a ring gear meshing said input gear each other so as to be rotated;

two output shafts arranged to be rotatable about an axis coinciding with said rotational axis of said cylindrical case body, each end of said two output shafts penetrating end walls of said case body;

two first engaging members each provided on an outer surface of said ends of said output shafts so as to be rotatable with and axially slidable relative to said output shafts;

two second engaging members provided within said case body in contact with each of said first engaging members;

two piston members each provided on an outer surface of said ends of said output shafts in contact with respective first engaging members so as to form two closed actuating chambers charged with viscous fluid together with two radially extending walls formed integrally with said case body; said piston members being rotatable with and axially slidable relative to said case body; and

two blade members each being rotatable bodily with each of said output shafts and disposed within each of said closed actuating chambers in relative slidable contact relation

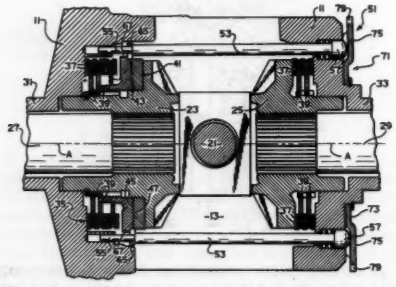
with said piston members, each of said blade members having an axial width which is narrower in an axial direction than said closed actuating chambers so that upon rotation of each of said blade members respectively with said closed actuating chambers, a high pressure is generated due to said viscous fluid being compulsorily moved between two respective surfaces defining respectively said closed actuating chambers, so as to axially respectively move said piston members respectively toward said first engaging members and so as to tightly respectively engage the same with said second engaging members for torque transmission between respective output shafts and said case body, wherein each of said blade members includes at least two radially extending blade portions which are formed to provide a circumferential space section between every two blade portions of said at least two radially extending blade portions so as that a large volume of said viscous fluid is filled within said circumferential space sections.

5,007,886

LIMITED SLIP DIFFERENTIAL

Ralph E. Holmquist, Battle Creek, and David A. Janson, Plymouth, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 26, 1989, Ser. No. 457,072
Int. Cl.[5] F16H *1/44*
U.S. Cl. 475—231 **16 Claims**



1. A differential gear mechanism of the type including a gear case defining an axis of rotation and a gear chamber; differential gear means disposed in said gear chamber including at least one input gear and first and second output gears; means for limiting differentiating action of said differential gear means in response to an input signal, said limiting means including clutch means operable between an engaged condition, effective to retard relative rotation between said gear case and said output gears, and a disengaged condition; said limiting means further including cam means operatively associated with said clutch means, and including first and second cam members, said second cam member being axially movable relative to said first cam member in response to relative rotation therebetween away from a neutral position, to effect said engaged condition of said clutch means; and an elongated actuation member being mounted for movement relative to said gear case and operable to be in engagement with said second cam member; characterized by:

(a) said elongated actuation member being supported by said gear case at two axially spaced-apart locations disposed on axially opposite sides of said input gear, and including a terminal portion extending through said gear case to the exterior thereof;

(b) said elongated actuation member being axially movable relative to said gear case, and including means biasing said actuation member toward a normally disengaged condition in which said first and second cam members remain in said neutral position;

(c) said actuation means further including means operable in response to said input signal to engage said actuation member and cause axial movement thereof, in opposition to the force of said biasing means; and

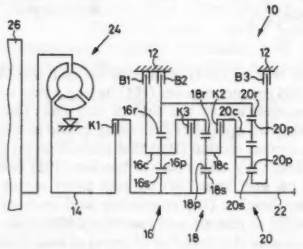
(d) said elongated actuation member being operably engaged with said second cam member, such that axial movement of said actuation member results in axial movement of said second cam member, relative to said first cam member, away from said neutral position.

5,007,887

PLANETARY GEAR TRANSMISSION FOR MOTOR VEHICLE

Toshiyuki Asada, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 17, 1989, Ser. No. 437,838
Claims priority, application Japan, Nov. 21, 1988, 63-294158
Int. Cl.[5] F16H *57/10*
U.S. Cl. 45—284 **24 Claims**



1. A planetary gear transmission for a motor vehicle, including an input member, an output member, a first single-pinion type planetary gear unit having a first sun gear, a first planetary gear meshing with the first sun gear, a first ring gear meshing with the first planetary gear and a first carrier rotatably supporting the first planetary gear, a second single-pinion type planetary gear unit having a second sun gear, a second planetary gear meshing with the second sun gear, a second ring gear meshing with the second planetary gear and a second carrier rotatably supporting the second planetary gear, and a third double-pinion type planetary gear unit having a third sun gear, at least one pair of third planetary gears which mesh with each other and one of which meshes with the third sun gear, a third ring gear meshing with the other of said at least one pair of third planetary gears, and a third carrier rotatably supporting said at least one pair of third planetary gears, said first, second and third planetary gear units being disposed coaxially with each other in the order of description, for transmitting power from said input member to said output member, at a selected one of different speed reduction ratios, wherein the improvement comprises:

said first and second sun gears being associated with each other by one of fixing means for fixing said first and second sun gears to each other, and a coupling device by which said first and second sun gears are connectable to each other;

said first carrier and said second ring gear being associated with each other by one of fixing means for fixing said first carrier and said second ring gear, and a coupling device by which said first carrier and said second ring gear are connectable to each other;

said first and third ring gears being associated with each other by one of fixing means for fixing said first and third ring gears to each other, and a coupling device by which said first and third ring gears are connectable to each other; and

said second and third carriers being associated with each other by one of fixing means for fixing said second and third carriers to each other, and a coupling device by

which said second and third carriers are connectable to each other.

5,007,888

ELECTRICAL INTERCONNECTION ASSEMBLY

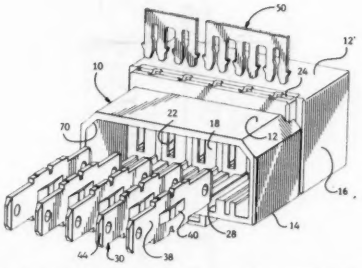
Alain Goutiere, Cergy Saint Christophe, France, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 13, 1990, Ser. No. 493,027

Claims priority, application France, Mar. 13, 1989, 89 03251

Int. Cl.[5] H01R *29/00*

U.S. Cl. 439—189 **2 Claims**



1. An electrical interconnection assembly comprising a housing having an array of electrical contact members therein, said contacts arranged for exposure to opposed openings in said housing, whereby electrical connection may be made therewith, where said contacts are elongated members having male tabs at each end thereof and disposed in parallel relationship within said housing, and including means for electrically engaging certain adjacent elongated contact members, characterized in that said means comprise a plurality of laterally disposed planar members accessible to said array of contact members through a lateral slot in a wall of said housing, and that each said planar member includes a slot for slidably receiving one elongated member, and means adapted to engage a wall of said housing to secure said elongated contact members from premature withdrawal from said housing.

5,007,889

APPARATUS FOR FEEDING CONTAINER BLANKS TO CONTAINER BOTTOM FORMING MANDREL

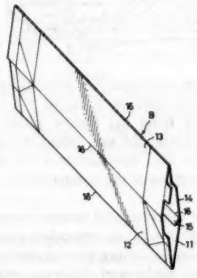
Shigeru Wakabayashi; Masao Shimokawa, and Masaki Takahashi, all of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Tokushima, Japan

Filed Dec. 27, 1989, Ser. No. 457,651

Claims priority, application Japan, Dec. 28, 1988, 63-170924[U]

Int. Cl.[5] B31B *5/06, 3/78*

U.S. Cl. 493—316 **6 Claims**



1. An apparatus for feeding blanks to a forming mandrel, each of the blanks having first to fourth four side wall panels divided by scores and joined to one another endlessly, the blank being folded to a flat form along the score between the first side wall panel and the second side wall panel and along the score between the third side wall panel and the fourth side wall panel so as to be unfoldable into a tube of rectangular to square cross section, the apparatus being adapted to unfold each blank to the tubular form and feed the tubular blank to the forming mandrel at rest at a feed station, the apparatus comprising:

a magazine having a delivery opening at one end thereof for accommodating a multiplicity of vertical flat blanks as arranged side by side from said one end toward the other end of the magazine, with the second and third side wall panels directed toward the delivery opening and with the second side wall panel positioned under the third side wall panel, the delivery opening being positioned at one side of an extension of the axis of the mandrel obliquely thereabove,

transport means for delivering the blanks from the delivery opening one by one and transporting each blank to a position on the extension of axis of the mandrel, the transport means having transport arms and a suction member for holding the second side wall panel of the blank thereto by suction, the suction member being attached to the forward ends of transport arms, the transport arms being fixed at their base ends to a first rotatable shaft from moving said arms disposed below the magazine and extending in parallel to the extension of axis of the mandrel,

means for unfolding the blank from the flat form to the tubular form by forming a fold in the opposed flat portions of the blank while the blank is being transported by the transport means, the unfolding means having an unfolding arm, the unfolding arm being fixed at its base portion to a second rotatable shaft for moving said arm extending in parallel to the first rotatable shaft, the second rotatable shaft being disposed on opposite side to the first rotatable shaft with respect to the path of movement of the second side wall panel of the blank held to the suction member so as to render the forward end of the unfolding arm movable into and out of the path of movement,

a holder for holding the tubular blank on the extension of axis of the mandrel in alignment therewith movably along the extension, and

a transfer assembly for transferring the blank from the holder to the mandrel.

5,007,890

WEB PLOW FOLDING

Ronald W. Alverth, Warrenville; Thomas H. Schumacher, Downers Grove, and Thaddeus M. Przybylowski, Worth, all of Ill., assignors to WPC Machinery Corporation, Downers Grove, Ill.

Continuation of Ser. No. 224,115, Jul. 25, 1988, abandoned. This application Dec. 6, 1989, Ser. No. 446,977

Int. Cl.[5] B65H *45/16*

U.S. Cl. 493—434 **16 Claims**

1. Apparatus for folding an elongated flexible web material having a path of travel there-through generally in the lengthwise direction of the apparatus, the web having a width that includes a main unfolded portion and a folded side portion after having passed through the apparatus, said apparatus comprising:

a frame,

entrance and exit rollers supported from said frame transversely of said path,

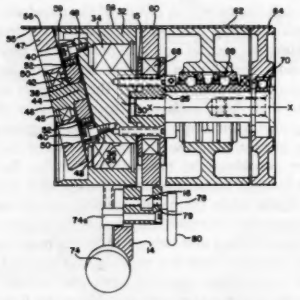
a plow folder assembly supported on the frame intermediate of said entrance and exit rollers and cooperative therewith to effect longitudinal folding of one side portion of said web material as it is moved along said lengthwise path from said entrance to said exit rollers, said plow folder assembly being in contact with the web material at an elevation that is generally different from the elevation of

said entrance and exit rollers, said plow folder assembly comprising:

a support means for attaching said plow folder assembly to said frame;

a generally hollow cylindrical roller means having an axis of rotation and being supported for rotation by said support means, said cylindrical roller means extending transversely relative to the lengthwise direction of the apparatus, the roller means presenting an arcuate portion of its periphery which provides a support surface for the main unfolded portion of the web material, said roller means having a predetermined diameter and having a hollow recess for receiving a portion of a rotatable plow folder member;

a plow folder means being attached to said support means adjacent said cylindrical roller means, said plow folder means having a frusto-conical peripheral outer portion rotatable about an axis of rotation and said outer portion having an outer diameter smaller than the inside diameter



of said recess of said cylindrical roller means so that said plow folder means at least partially fits within said recess of said cylindrical roller means, said frusto-conical peripheral outer portion being adapted to contact the web material along an arcuate angle and provide a relatively sharp edge for initiating the formation of a fold in the web material, said plow folder means being oriented relative to said cylindrical roller means such that the portion of said frusto-conical peripheral outer surface along said arcuate angle which is adapted to contact the web material is generally coextensive with the outer surface of said arcuate portion of the periphery of said cylindrical roller means so as to present a substantially uninterrupted support for the web material;

means for adjusting the angular orientation of said plow folder means generally around the axis of rotation of said cylindrical roller means to thereby adjust the angular orientation of said arcuate angle of said plow folder means and of said cylindrical roller means which contacts the web material.

5,007,891

DEVICE FOR PRODUCING AN ADDITIONAL FOLD IN FOLDING DEVICES OF ROTARY PRINTING PRESSES

Eduard von Hein, Bern, Switzerland, assignor to Maschinenfabrik Wifag, Bern, Switzerland

Filed Oct. 25, 1989, Ser. No. 427,463

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1988, 3836342

Int. Cl.[5] B65H *45/16*

U.S. Cl. 493—444 **7 Claims**

1. A print copy folding device arrangement, comprising:

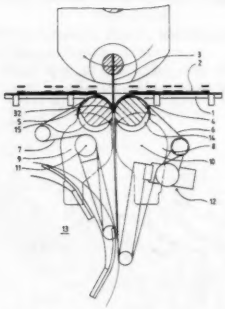
folding blade means;

first folding roller;

a second folding roller, said second folding roller rotating in a direction opposite to the direction of rotation of said first folding roller, said first folding roller and said second folding roller each having a central rotational axis and being driven in cadence with print copies, said first folding roller including a peripheral surface divided into three peripheral area segments sequentially arranged around the circumference of said first folding roller, including

a first peripheral area having a surface extending about a first circumferential portion of said first roller,

a second peripheral area including a recessed peripheral surface, said recessed peripheral surface being disposed



radially inwardly with respect to said surface of said first peripheral area and having residual peripheral surfaces disposed at each side of said recessed peripheral surface, said residual peripheral surface forming a continuation of said surface of said first peripheral area,

a third peripheral area extending about a third circumferential portion of said first roller, said third peripheral area having a recessed surface; and,

conveyor belt means engaging each of said rollers for removing the folded print copies from the folding zone.

5,007,892

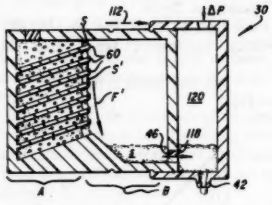
PHASE SEPARATION CONTAINER WITH FIXED MEANS PREVENTING REMIXING

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.J.

Filed Mar. 20, 1989, Ser. No. 325,725

Int. Cl.[5] B04B *11/04*

U.S. Cl. 494—17 **9 Claims**

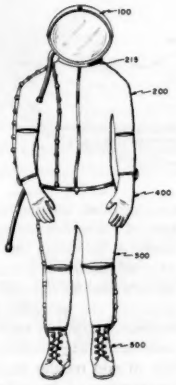


1. In a centrifuge container for separating two phases of different specific gravities in a liquid by centrifuging the heavier phase away from the lighter phase, said container including a compartment for said liquid defined by opposing walls, and means in said compartment for maintaining said phases in separate regions of the compartment after centrifugation,

the improvement wherein said means comprise fixed maintaining means that will accommodate expected variations in phase volumes, including porous mechanical means for resisting flow of the heavier phase out of its compartment portion in the presence of shear forces occurring when the lighter phase is drawn off, said mechanical means being

disposed in said compartment region to be occupied by said heavier phase.

5,007,893
COMBINATION ANTI-G AND PRESSURE SUIT
Roderick J. Row, P.O. Box 923, Destin, Fla. 32541
Filed Mar. 16, 1988, Ser. No. 169,049
Int. Cl.[5] A62B *17/00*
U.S. Cl. 600—20 **7 Claims**



1. An anti-G suit adapted to simulate liquid immersion from the neck to the feet of a wearer thereof and capable of providing for both negative and positive protection during vertical accelerations, which comprises:

an inner, air-impervious, elastic suit adapted to fit from the neck to the feet over the body of the wearer;

an outer, air-impervious flexible, non-distensible suit adapted to fit from the neck to the feet over the body of the wearer, said outer suit being joined to said inner suit such that said inner and outer suits define a plurality of air-impervious separate toroidal segments which are adapted to encircle the wearer's body from the neck to the feet, said toroidal segments being stacked one upon another in the vertical direction when said suit is worn in the wearer's normal standing position;

helmet means adapted to be affixed to the neck region of said suit;

collar sealing means for preventing any air from leaking between said helmet means and the space between said helmet means and the body of the wearer in use;

means for introducing respiratory air into said helmet means at a controlled substantially constant pressure regardless of any gross accelerations to which the wearer is subjected;

means for exhausting exhaled air from said helmet means;

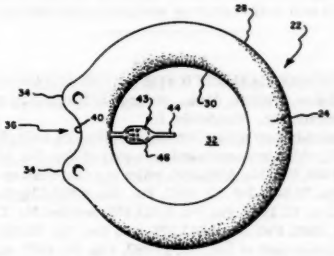
means for introducing and removing a pressurized gas into each of said toroidal segments, the pressure of the gas being transmitted during use to the body of the wearer through said inner suit; and

means cooperative with said means for introducing and removing a pressurized gas into said toroidal segments for continuously adjusting the gas pressure in each respective segment during use in accordance with the following equation:

$$P_s = P_r + (Sg \times V \times G)$$

where P_s is the gas pressure in each respective segment, P_r is the pressure of the respiratory air in said helmet, Sg is the gravity gradient of the body fluid of the wearer in use, V is the vertical center height of each respective segment relative to an arbitrary mid-chest location (V_o) at which thoracic external displacement due to respiration will encounter an average external pressure equal to internal respiration pressure, and G is the acceleration of gravity, to match the internal body fluid pressures of the wearer encircled thereby in use resulting from vertical accelerations, thereby providing both positive and negative G protection.

5,007,894
FEMALE INCONTINENCE DEVICE
Goran Enhorning, 21 Oakland Pl., Buffalo, N.Y. 14222
Filed Feb. 10, 1989, Ser. No. 309,383
Int. Cl.[5] A61F *2/00*
U.S. Cl. 600—29 **7 Claims**



1. A female incontinence device capable of being removably inserted into the vagina for supporting the tissue of the vaginal wall to each side of the urethra, comprising:

an annular inflatable body section for insertion into the vagina, the body section having an exterior surface capable of contacting the walls of the vagina when inflated so that relative movement of said body section with respect to the vagina is restricted,

said body section including two projections, there being a U-shaped surface between the projections, the projections supporting the superior vaginal tissue on each side of the urethra in such a manner that the tissue therebetween is stretched and can offer counter pressure when intra-abdominal pressure is suddenly raised as occurs during coughing, sneezing, laughing and physical exercise such that the intra-abdominal pressure is transmitted to the upper urethra so that the greatest difference between intra-urethral and simultaneous bladder pressure remains positive regardless of the changes in the intra-abdominal pressure so continence is preserved; and

means for inflating and deflating the body section so that proper support of the superior wall of the vagina is accomplished.

5,007,895
WOUND PACKING INSTRUMENT
George S. Burnett, 935 Gossett Rd., Spartanburg, S.C. 29302
Filed Apr. 5, 1989, Ser. No. 333,338
Int. Cl.[5] A61F *13/20*
U.S. Cl. 604—11 **22 Claims**

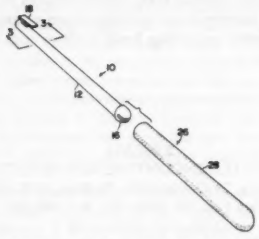
1. An instrument for placing a material into a wound, comprising:

an elongated shaft being capable of sterilization;

a tip at a distal end of said shaft adapted for atraumatic contact with the wound;

said tip having means for holding a portion of material to be inserted into the wound; and

said means for holding being configured to hold the material during insertion into the wound and permitting release of



the material for withdrawal of the instrument from the wound;

wherein said instrument is of one piece construction.

5,007,896

ROTARY-CATHETER FOR ATHERECTOMY

Samuel Shiber, Woburn, Mass., assignor to Surgical Systems & Instruments, Inc., Mundelein, Ill.

Continuation-in-part of Ser. No. 286,509, Dec. 19, 1988, Pat. No. 4,894,051, which is a continuation-in-part of Ser. No. 243,900, Sep. 13, 1988, Pat. No. 4,886,490, which is a continuation-in-part of Ser. No. 78,042, Jul. 27, 1987, Pat. No. 4,819,634, Ser. No. 205,479, Jun. 13, 1988, Pat. No. 4,883,458, and Ser. No. 225,880, Jul. 29, 1988, Pat. No. 4,842,579, said Ser. No. 78,042, is a continuation-in-part of Ser. No. 18,083, Feb. 24, 1987, said Ser. No. 205,479, is a continuation-in-part of Ser. No. 18,083, , said Ser. No. 225,880, is a continuation-in-part of Ser. No. 18,083, , which is a continuation-in-part of Ser. No. 874,546, Jun. 16, 1986, Pat. No. 4,732,154, which is a continuation-in-part of Ser. No. 609,846, May 14, 1984, abandoned. This application Mar. 16, 1989, Ser. No. 324,616

The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.

Int. Cl.[5] A61B *17/32*

U.S. Cl. 604—22 **22 Claims**

1. An atherectomy system insertable into a human blood vessel for coring and removing an obstruction therein, comprising in combination:

a flexible guide-wire insertable into said blood vessel,

a flexible rotary-catheter defining continuous passage and being rotatably disposed and slidable over said flexible guide-wire, said flexible rotary-catheter having a proximal and distal ends,

a rotary coring means for cutting and ingesting obstruction material, located at said distal end,

a coupling means for rotating said flexible rotary-catheter around said flexible guide-wire, located at said proximal end,

means for diametricaly stabilizing and means for transmitting torque being incorporated in said flexible rotary-catheter.

5,007,897

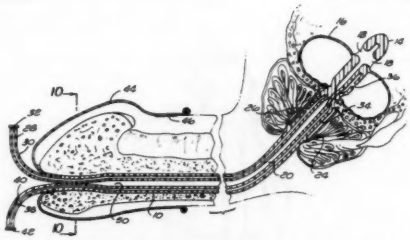
DRUG DELIVERY CATHETER

Irvin M. Kalb, 327 Alta Ave., Santa Monica, Calif. 90402, and Michael J. Ram, 1 Horseshoe Rd., Bell Canyon, Calif. 91307

Filed May 30, 1989, Ser. No. 358,083

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—43 **4 Claims**



1. A system for the controlled, continuous delivery over an extended period of time of a drug containing fluid to the prostate comprising a catheter including an elongated tubular member having an external distal end and a proximal end for placement into the urinary bladder through the male urethra, expandable means adjacent the proximal end to retain the catheter in sealing abutment against the neck of the bladder, an expandable porous membrane bag integral with and spaced from the outer surface of said tubular member, distal to the expandable means for retention of the catheter, a drug lumen within said tubular wall connecting the space between the outer surface of said tubular member and the membrane bag with a valve mounted on the distal end of the lumen for the introduction of the drug to the prostate, said membrane positioned so that upon placement of the catheter the membrane bag is adjacent the prostate ducts, the catheter having a lumen within the wall of said tubular member connecting the expandable retention means with a valve on the distal end of said tubular member the elongated tubular member also having a drainage lumen therein extending from the proximal end only partially along the length of the elongated member, the expansion lumen and the drug lumen for a portion of their length being enclosed within tubular members having semicircular crosssections and opposing flat surfaces.

5,007,898

BALLOON DILATATION CATHETER

Robert F. Rosenbluth, Laguna Niguel; Jay A. Lenker, Laguna Beach, and George R. Greene, Costa Mesa, all of Calif., assignors to Advanced Surgical Intervention, Inc., San Clemente, Calif.

Filed Jun. 2, 1988, Ser. No. 201,686

Int. Cl.[5] A61M *29/02*

U.S. Cl. 604—54 **16 Claims**

1. An intraurethral dilatation apparatus for relieving the symptoms of obstructive prostatism, said device comprising:

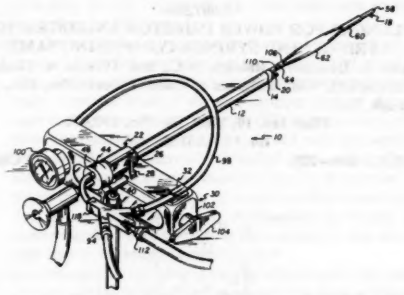
an axially elongate introduction sheath, adapted for insertion into the urethra to receive and guide both a catheter shaft and a cystoscopic lens therethrough, so as to minimize trauma to the urethral lining during the insertion of said catheter and said lens;

a tubular, axially elongate, catheter shaft for insertion through said sheath, having a distal end to facilitate manipulation of said device within the urethra;

an expansible locating balloon, disposed near the distal tip of said catheter shaft and bonded thereto; and

a dilatation balloon, on said catheter shaft situated proximally of said expansible locating balloon, said dilatation ballon outwardly radially expandable to a preselected configura-

tion in response to inflation thereof, wherein said dilatation balloon exhibits proximal and distal shoulders, and



wherein a portion of said locating balloon overlaps at least a portion of said distal shoulder of said dilatation balloon.

5,007,899

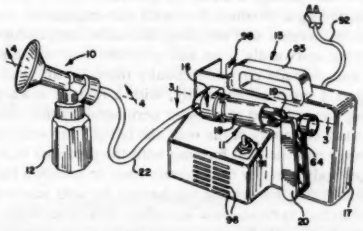
DRIVE UNIT ADAPTED FOR USE WITH MANUAL PISTON PUMP

Karl O. A. H. Larsson, Schweiz, Switzerland, assignor to ISG-/AG, Zug, Switzerland

Filed Feb. 29, 1988, Ser. No. 162,056

Int. Cl.[5] A61M *1/06*

U.S. Cl. 604—74 **13 Claims**



1. An improved breast pump assembly including a hand-held manually operable breast pump having a hand-drivable piston pump with a piston rod specifically adapted to be grasped to drive a piston received for reciprocating movement within a chamber of a piston cylinder to generate, in use, a periodic suction within a breast-hood emplaced on a breast to effect the expression of mother's milk, wherein the improvement comprises:

a motor drive unit having means for releasably receiving and holding the hand-drivable piston pump, said drive unit further having means for driving the piston rod for reciprocating movement of the piston in the piston chamber.

5,007,900

PERCUTANEOUS ENDOSCOPIC GASTROSTOMY DEVICE

George J. Picha, Independence, and Dean J. Secrest, Euclid, both of Ohio, assignors to Applied Medical Technology, Inc., Independence, Ohio

Filed Oct. 31, 1989, Ser. No. 429,769

Int. Cl.[5] A61M *5/32*

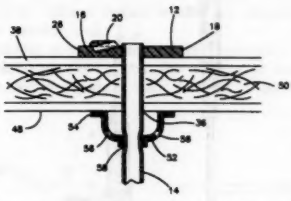
U.S. Cl. 604—106 **25 Claims**

1. A catheter insertable into a passage through a wall using a rod having a tip, said catheter comprising:

a resilient tube having a distal end, a central axis and a proximal end;

a pair of resilient diametrically opposed, oppositely extending wings connected about the distal end; and

a pocket in at least one of said wings, said pocket being spaced radially outward from the central axis of said tube



and being adapted to receive the tip of the rod, whereby the pair of wings may be urged to a position collateral with the tube by inserting the tip in the pocket and orienting the rod collateral with the tube.

5,007,901

INTRAVENOUS CATHETER INSERTION DEVICE

Jack W. Shields, 1950 Las Tunas Rd., Santa Barbara, Calif. 93103

Continuation of Ser. No. 440,859, Nov. 24, 1989, abandoned. This application Sep. 12, 1990, Ser. No. 582,128

Int. Cl.[5] A61M *5/50*

U.S. Cl. 604—110 **4 Claims**

1. An integral intravenous catheter placement assembly for introducing a catheter into the vein of a patient comprising, in combination, an intravenous catheter and an intravenous catheter insertion assembly,. said intravenous catheter having a distal end adapted for insertion within a vein of a patient, said catheter further having a proximal end having a luer-lock hub attached thereto, said luer-lock hub providing means for the secure attachment of said intravenous catheter to said intravenous catheter insertion assembly, said intravenous catheter insertion assembly further comprising a needle trap with a luer-lock fitting on its distal end to releasably engage said proximal hub on said intravenous catheter, a hollow introducer needle having a proximal end and a sharp distal end, said introducer needle being disposed within the lumen of said intravenous catheter, and a needle guide breakably attached to the proximal end of said hollow introducer needle.

5,007,902

CATHETER SET FOR PLEXUS ANESTHESIA

Hans-Hinrich Witt, Koerle, Fed. Rep. of Germany, assignor to B. Braun Melsungen AG, Melsungen, Fed. Rep. of Germany

Filed Feb. 22, 1989, Ser. No. 313,706

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1988, 8803153[U]

Int. Cl.[5] A61M *5/162*

U.S. Cl. 604—117 **5 Claims**

1. A catheter set for plexus anesthesia, comprising:

a puncture cannula,

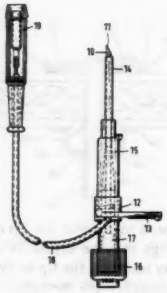
a capillary releasably fastened to the puncture cannula,

a catheter adapted for insertion through the capillary, the catheter having a front end and a rear end, the front end of the catheter being open,

an electrically conductive guide wire adapted for insertion into the catheter, the guide wire having a front end and a rear end,

means for indicating the relative position of the guide wire and the catheter, and

an electric contact provided at the rear end of the guide



wire, the electric contact being adapted for electrical connection to a neurostimulator,

wherein the position of the catheter in the fascia can be determined by neurostimulation through the guide wire.

5,007,903

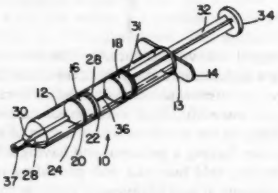
SYRINGE ADAPTED TO PREVENT NEEDLE STICKS

Terence R. Ellard, Seattle, Wash., assignor to Real World Design & Development Company, Seattle, Wash.

Filed Nov. 22, 1988, Ser. No. 274,817

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—195 **14 Claims**



1. An improved syringe, comprising:

a syringe barrel;

a first, forward piston member and a second rear piston member, said first and second piston members being positioned in succession within the syringe barrel and adapted for fluid-tight movement therein;

a hollow needle extending from the front end of the first piston member and in fluid communications with the space between the first and second piston members, wherein said needle extends outwardly from the front end of the barrel when the first piston member is in its forwardmost position within the barrel;

a plunger attached to the second piston member, the plunger extending from the rear end of the barrel;

a connecting member, independent of the needle and the barrel, extending between the first and second piston members and connected thereto, wherein said connecting member is positioned within the barrel and is collapsible such that when the first and second piston members are in a first relationship relative to each other, forward movement of the second piston member results in forward movement of the first piston member and such that when the first and second piston members are in a second relationship relative to each other, rearward movement of the second piston member results in rearward movement of said first piston member and such that the second piston member can move a selected distance toward and away from the first piston member within the barrel without moving the first piston member when the first and second piston members are not in said first or second relationship.

5,007,904

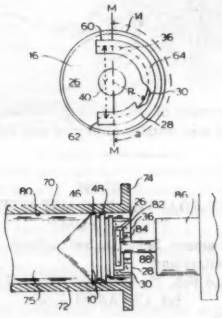
PLUNGER FOR POWER INJECTOR ANGIOGRAPHIC SYRINGE, AND SYRINGE COMPRISING SAME

Larry L. Densmore, Raleigh, N.C., and Thomas A. Lindner, Brookfield, Wis., assignors to Coeur Laboratories, Inc., Raleigh, N.C.

Filed Jan. 19, 1989, Ser. No. 299,974

Int. Cl.[5] A61M *5/20*

U.S. Cl. 604—228 **12 Claims**



1. A plunger for a power-driven angiographic syringe, said plunger comprising a body of generally convergent distal profile having a proximal face with ram-engageable coupling structure thereon, said coupling structure comprising a wall extending rearwardly from said proximal face of the plunger body and partially circumferentially thereon, said wall terminating at a proximal extremity, with a radially inwardly extending flange joined at an outer peripheral portion thereof to a proximal extremity of the wall, the radially inwardly extending flange and the wall forming with the proximal face of the plunger body a cavity transversely open to insertion thereinto of a ram head of a driving mechanism for said power-driven angiographic syringe, said coupling structure being transversely engageable by, and transversely disengageable from, said ram head of said driving mechanism for said power-driven angiographic syringe, but once transversely engaged by said ram head, being non-disengageable by rotation of said ram head relative to said plunger, in the absence of any transverse translation of the driving mechanism and plunger relative to one another.

5,007,905

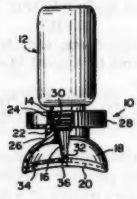
EYE DROP APPLICATOR

George C. Bauer, P.O. Box 825, Meredith, N.H. 03253

Filed Feb. 20, 1990, Ser. No. 481,634

Int. Cl.[5] A61M *35/00*

U.S. Cl. 604—295 **1 Claim**



1. An improved eye drop applicator for an eye dropper vial

of the type having an externally threaded neck and a nozzle, said improved eye drop applicator comprising:

(a) a cup having a lip portion adapted to fit around an eyeball of a user of said improved eye drop applicator so as to keep the eye lid open;

(b) a sleeve having an internally threaded passageway extending from the apex of said cup, in which said internally threaded passageway is removably connected to the externally threaded neck of the eye dropper vial, so that the user can squeeze the eye dropper vial to direct an eye drop from the nozzle of the eye dropper vial onto the center of the eyeball, said internally threaded passageway of said sleeve having an annular shoulder therein to prevent the tip of the nozzle of the eye dropper vial from penetrating too far into said cup thereby maintaining the nozzle in a desired spaced relationship to the eyeball of the user of said improved eye drop applicator;

(c) an enlarged collar concentrically affixed onto said sleeve to help aid the user of said improved eye drop applicator to removably connect said internally threaded passageway of said sleeve to the externally threaded neck of the eye dropper vial; and

(d) a protective shield having a central aperture and is affixed within said cup with said central aperture directly under the tip of the nozzle of the eye dropper vial, whereby said protective shield will help prevent the eyeball of the user of said improved eye drop applicator from making contact with the tip of the nozzle of the eye dropper vial.

5,007,906

DECOUPLED SANITARY NAPKIN

Thomas W. Osborn, III, Cincinnati, and Deborah C. Schmitz, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 27, 1989, Ser. No. 429,252
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—385.1 **9 Claims**

1. A sanitary napkin having two spaced apart transverse edges, said sanitary napkin comprising:

a liquid pervious topsheet;

a liquid resistant backsheet joined to said topsheet along one said transverse edge and unattached to said topsheet along the other said transverse edge, whereby said backsheet may be separated from said topsheet at said unattached transverse edge;

an absorbent core associated with said topsheet and intermediate said topsheet and said backsheet; and

a means for controlling the separation of said topsheet from said backsheet.

5,007,907

RESECTOSCOPE APPARATUS

Shinichi Nishigaki, Tokyo, and Shiro Bito, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1988, Ser. No. 254,741
Claims priority, application Japan, Oct. 7, 1987, 62-254069
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—46 **8 Claims**

1. A resectoscope apparatus comprising:

an elongate hollow sheath to be inserted into a body cavity;

an electrode inserted through said sheath to make such treatments as of resecting and coagulating tissues within the body cavity by using a high frequency current;

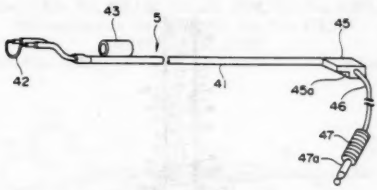
an operating part which can operate said electrode from outside the body;

a cord for feeding a high frequency current to said electrode from a high frequency current source;

an optical sighting tube inserted through said sheath and having an optical system which can observe the body cavity interior; and

a connecting means mechanically removably connecting said electrode shaft part at the rear end to said slider,

wherein said electrode is made integral at least on the rear



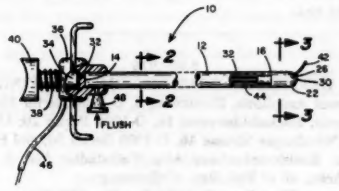
end side with said cord, wherein said electrode on the rear end side and said cord are made integral as electrically connected as insulated from outside, wherein said electrode has a shaft part connected at the rear end to said operating part and inserted in said sheath and a tip electrode part provided at the tip of said shaft part and projected and retracted from said sheath tip by the operation of said operating part, wherein said operating part has a connecting part removably connectable to said sheath at the rear end and a slider connected with said electrode shaft part at the rear end and slidable in the axial direction.

5,007,908

ELECTROSURGICAL INSTRUMENT HAVING NEEDLE CUTTING ELECTRODE AND SPOT-COAG ELECTRODE

Mark A. Rydell, Golden Valley, Minn., assignor to Everest Medical Corporation, Brooklyn Center, Minn.

Filed Sep. 29, 1989, Ser. No. 414,448
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—47 **8 Claims**



1. An electrosurgical instrument comprising:

(a) an elongated tubular member having a proximal end, a distal end and plural lumens extending between said proximal and distal ends;

(b) a bullet-shaped ceramic tip member affixed to said distal end of said tubular member, said tip member having a longitudinal bore formed therein, said bore exiting through an opening in the exterior of said tip member at a location displaced laterally from the longitudinal axis of said tubular member;

(c) a first conductor disposed in one of said lumens;

(d) means connected to said proximal end of said tubular member and joined to said first conductor for selectively displacing said first conductor whereby the distal end of said first conductor may be made to pass through said longitudinal bore and said opening;

(e) a conductive surface adhered to said exterior of said ceramic tip member and surrounding but spaced from said opening; and

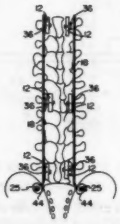
(f) a second conductor passing through another of said plural lumens and electrically joined to said conductive surface.

5,007,909

APPARATUS FOR INTERNALLY FIXING THE SPINE

Chaim Rogozinski, 4453 Forest Dr. South, Jacksonville, Fla.

Filed Nov. 5, 1986, Ser. No. 928,647
Int. Cl.[5] A61F 5/00
U.S. Cl. 606—61 5 Claims



1. A method for correcting deformaties or instabilities of the spine by posterior surgical procedures, which method comprises:

surgically exposing the spine posteriorly;

affixing clamps onto the laminae of vertebrae;

beginning at either end of the line of affixed clamps attaching rod attachment means to each of said clamps; and

beginning at either end of said line of affixed clamps inserting a rod into said rod attachment means;

compression or distraction being applied to the spine between a first clamp and a second clamp in the line of clamped vertebrae by fixedly securing said rod to said first clamp and compressing or distracting said second clamp with respect to said first clamp and fixedly securing said rod to said second clamp, proceeding from the secured second clamp to the next clamp in the line of clamped vertebrae and compressing or distracting the next clamp with respect to said second clamp and fixedly securing said rod to said next clamp until all clamps are secured to said rod.

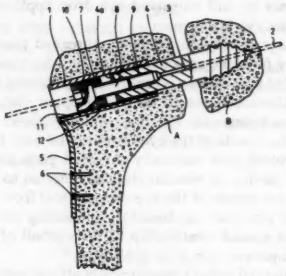
5,007,910

DEVICE FOR COMPRESSION SCREWING

Emmanuel Anapliotis, Kiebitzweg 5, D-1000 Berlin 33; Gernot Regener, Bocksfeldstrrasse 1e, D-1000 Berlin 20; Uwe Ahrens, Nürnberger Strasse 46, D-1000 Berlin 30, and Hermann Jehle, Kreiskrankenhaus Alte Waibstädter Str. 2, D-6920 Sinsheim, all of Fed. Rep. of Germany

Filed Dec. 22, 1989, Ser. No. 453,289
Claims priority, application Fed. Rep. of Germany, Jan. 4, 1989, 8900121[U]
Int. Cl.[5] A61F 5/04
U.S. Cl. 606—65 6 Claims

1. Device for compression screwing fractures of the femural neck, consisting of a plate of a sleeve, the sleeve being hollow and cylindrical in shape, the plate of the sleeve being attached by screws to the femur shaft and of a bone screw being located within the sleeve which is provided with a female thread on its head side into which a compression screw having a respective male thread fits, whereby said compression screw is supported by means of the (bottom edge of its head (or) by a respective, especially conical contact surface) for the limitation of its movement against a fixing ring being located within said sleeve in such a way that it can be displaced, sliding with its surface along the inner surface of said sleeve and having a conical surface in an axial direction that is adapted to the bottom edge of the head of said compression screw and the cone angle of which is sized in such a way that the adhesive friction between the outer surface of the fixing ring and the inner surface of said



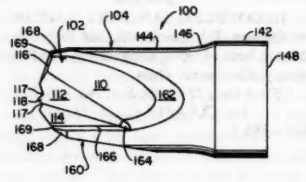
sleeve is greater than the compressional force acting in the longitudinal direction of said compression screw.

5,007,911

DRILL HEAD ASSEMBLY FOR CRANIAL PERFORATORS

John W. Baker, 4 Wachusett Dr., Acton, Mass. 01720

Continuation of Ser. No. 108,421, Oct. 14, 1987, abandoned.
This application Oct. 18, 1989, Ser. No. 423,660
Int. Cl.[5] A61B 17/16
U.S. Cl. 606—80 24 Claims



1. A perforator comprising:

(1) a drill head assembly comprising (a) an inner drill having a plurality of inner cutting flutes, each terminating in a front cutting edge, and (b) an outer drill comprising a plurality of outer cutting flutes, each terminating in a front cutting edge, said drill head assembly being constructed so that the leading portions of said front cutting edges of said outer cutting flutes are contiguous with the peripheral portions of said front cutting edges of said inner cutting flutes so long as said drill assembly is enabled and said inner drill encounters a resistive surface; and

(2) drive means for enabling said drill head assembly when said inner drill is encountering a resistive surface, and disabling said drill head assembly when said inner drill is no longer encountering said resistive surface while said outer drill is still encountering said resistive surface.

5,007,912

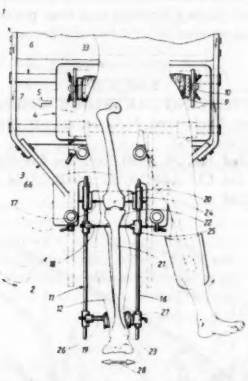
ARRANGEMENT FOR FIXING A KNEE-JOINT IN DEFINED POSITIONS AND FOR POSITIONAL CONTROL OF INSTRUMENTS FOR REPLACING THE KNEE-JOINT WITH A PROSTHESIS

Björn Albrektsson, Värslevägen 39, Askim, Sweden S-436 43 , and Stig Wennberg, Villa Holma Pl 6266, Angered, Sweden S-424 57

Filed May 30, 1990, Ser. No. 530,611
Int. Cl.[5] A61F 5/04, 5/37; A61G 13/00
U.S. Cl. 606—87 9 Claims

1. Arrangement for fixing a knee-joint in defined positions and for positional control of instruments for replacing the knee-joint of a patient with a prosthesis, which arrangement is

designed to be connected to an operating table (1) intended to support the patient, characterized in that the arrangement comprises, on the one hand, a stand (3) which can be connected to the operating table (1), an alignment instrument (2) which is supported by the stand and is used for aligning both femur and the tibia relative to a reference axis, and, on the other hand, a positional control unit (47) which can be connected to the stand in defined positions and is used for positional control of at least one instrument (48) relative to the knee-joint, which alignment instrument comprises a fixture (4),



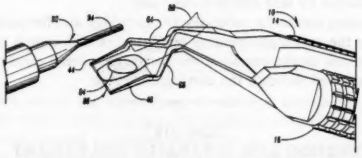
supported by the stand, for the trunk of the patient, which trunk fixture is adjustable and can be locked in selected positions by displacement transverse to the said reference axis, and a limb fixture, supported by the stand, for fixing the knee-joint (20, 22) and ankle-joint (23) of the patient, in that the said limb fixture (11) for fixing the knee-joint and ankle-joint consists of a fixation frame which is pivotably mounted on the stand by means of a pivot hinge (13) and which, by means of its pivotability, can be set in different angular positions relative to the operating table.

5,007,913

APPARATUS AND METHOD FOR IMPLANTATION OF INTRAOCULAR LENSES

David H. Dulebohn, Tonka Bay, and Winston R. Lindberg, Plymouth, both of Minn., assignors to Alcon Surgical, Inc., Fort Worth, Tex.

Filed Sep. 19, 1989, Ser. No. 409,329
Int. Cl.[5] A61F *9/00*
U.S. Cl. 606—107 **36 Claims**



1. An apparatus for insertion of an intraocular lens into a patient's eye comprising:

manipulating tool means for holding and transporting the lens through an incision into the eye and releasing the lens in the eye;

a sling means having an elastromeric resilient surface and connection means for attachment to the manipulating tool means and being resilient to extend to substantially encapsulate the lens when folded upon itself;

the surface of the sling means being adapted to receive and substantially encapsulate a lens folded upon itself; and

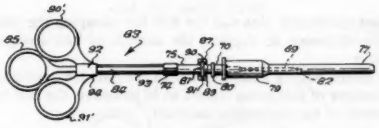
the manipulating tool means being adjustable between a first position where the connection means allows manipulation of the sling means to encapsulate and hold the lens within the sling means, and a second position where the connection means allows manipulation of the sling means to resiliently open to receive the lens before insertion into the eye, and to release the lens from its folded state once in the eye.

5,007,914

CATHETER-INSERTION DEVICE

Paul E. Schweigerling, 130 Rolling Green La., Elma, N.Y. 14059

Division of Ser. No. 208,670, Jun. 20, 1988, Pat. No. 4,889,118. This application Nov. 15, 1989, Ser. No. 473,716
Int. Cl.[5] A61M *25/01*
U.S. Cl. 606—108 **8 Claims**



1. A device for inserting a catheter into a body vessel of a patient wherein said catheter is of the type having a catheter hub and an elongated tube attached thereto and is mounted on a cannula of the type having a cannula hub with an elongated needle having a pointed tip which extends into and beyond said tube of said catheter comprising first engagement means for engaging and holding said cannula hub, second engagement means for engaging said catheter hub, first finger-receiving means, first connecting means connecting said first finger-receiving means to said first engagement means, second finger-receiving means, second connecting means connecting said second finger-receiving means to said second engagement means, means mounting said first and second connecting means for movement relative to each other, said first and second engagement means initially occupying a position wherein said cannula and catheter may be cooperatively mounted on said device with said pointed tip extending beyond said tube to permit said pointed tip of said cannula and said tube to be initially inserted into said body vessel, and said first and second finger-receiving means being movable relative to each other while said first engagement means continues to hold said cannula to cause said first engagement means to withdraw said cannula from said catheter after said tube has been inserted into said body vessel and while said second engagement means remains in engagement with said catheter to cause it to remain in position in said body vessel.

5,007,915

DEPILATORY DEVICE

Avraham Nussbaum, Moshav Mazor, Israel, assignor to Crestmoore Ltd., Hong Kong

Continuation of Ser. No. 258,584, Oct. 17, 1988, Pat. No. 4,923,463. This application Nov. 28, 1989, Ser. No. 442,778
Claims priority, application Israel, Feb. 28, 1988, 85568
The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—133 **6 Claims**

1. A depilatory apparatus comprising:

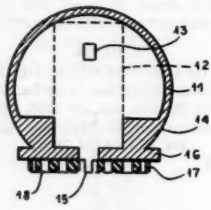
a manually grippable and portable housing including an exterior plate adapted to be moved in juxtaposed relationship to an area of a user's skin from which hair sprouts;

the housing provided with an electric motor and switching means operatively associated therewith for optionally engaging it with and disengaging it from a source of energy;

a plurality of pins arranged to project outwardly from the housing through the plate for engagement with and sub-

stantially normal to said skin with the pins connected operatively to the motor for rotation;

an endless belt engaged to run continuously about at least two of the pins, whereby when the pins contact the hair, strands of the hair are caught between at least one of the



last-mentioned pins and the belt for clamping the strands therebetween to depilate the strands of hair along said skin;

the motor having a shaft to which the pins are coupled, the number of pins being from 2 to 30 inclusive, the belt being made of an elastomeric material.

5,007,916

METHOD AND MATERIAL FOR PREVENTION OF SURGICAL ADHESIONS

Cary B. Linsky, East Brunswick, and Timothy J. Cunningham, Flemington, both of N.J., assignors to Johnson & Johnson Medical, Inc., Arlington, Tex.

Division of Ser. No. 768,280, Aug. 22, 1985. This application Nov. 16, 1989, Ser. No. 437,234

Int. Cl.[5] A61B *17/08*

U.S. Cl. 606—151 **14 Claims**

1. A PostoPerative adhesion barrier comPrising a conformable fabric constructed of a bioresorbable material, said fabric being characterized by having a density of 8.0 to 15 mg/cm2 and a Porosity of 12 to 20 Percent oPen area.

5,007,917

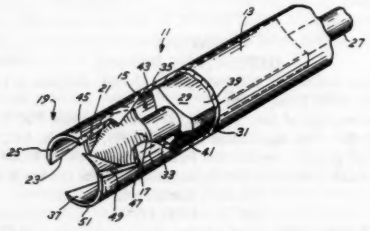
SINGLE BLADE CUTTER FOR ARTHROSCOPIC SURGERY

James A. Evans, Galesburg, Mich., assignor to Stryker Corporation, Kalamazoo, Mich.

Filed Mar. 8, 1990, Ser. No. 490,913

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—170 **8 Claims**



1. A surgical instrument for cutting tissue comprising:

a cylindrical tube having an open distal end and a side window formed in its distal end through which tissue may enter said tube for cutting;

a tissue cutter head rotatable within said tube relative to said open end and said window, said cutter head including:

(i) a cylindrical base portion having a radial surface closely conforming to the inside surface of said tube;

(ii) a sole blade located along one circumferential side of and extending distally from said base portion and bearing a first and a second cutting edge, said first cutting edge disposed on said blade for traveling in a cylindrical locus closely adjacent to the inside surface of said tube relative to said window for passing across one edge of said window during at least a portion of the rotation of said cutter head for cutting tissue protruding laterally through said window, and said second cutting edge for cutting tissue protruding axially through said distal end, said first and second cutting edges meeting in a sole point, said sole point being the most distal point of said cutter head, and

(iii) a sole debris channel formed by a cavity in said cutter head and passing through said base portion for receiving tissue severed by said first and second cutting edges.

5,007,918

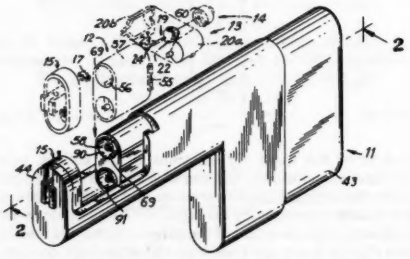
EAR PIERCING CARTRIDGE ASSEMBLY

Samuel J. Mann, Englewood, N.J., assignor to Inverness Corporation, Fair Lawn, N.J.

Filed Jan. 24, 1990, Ser. No. 469,626

Int. Cl.[5] A44C *7/00*; **A61B** *17/34*

U.S. Cl. 606—188 **11 Claims**



1. An ear piercing assembly comprising in combination:

a piercing earring including an ornamental head and a piercing pin projecting from the head;

a cartridge adapted to receive the piercing earring and substantially envelope the piercing earring, the cartridge including an elongated opening partially supporting the piercing pin, and a further opening proximate the ornamental head of the earring, said further opening being in axial alignment with the elongated opening, the elongated opening having a smaller lateral dimension than the further opening;

a shield means positioned within said cartridge between the ornamental head of the piercing earring and the further opening so that the pressure across the ornamental head from a push rod which enters the further opening is distributed by said shield means; and

a housing means for receiving the cartridge and for positioning the cartridge openings in alignment with a push rod to prevent displacement of the cartridge when a push rod is displaced through the earring cartridge.

5,007,919

METHOD AND APPARATUS FOR PATIENT PROTECTION AGAINST VESSEL RUPTURE FROM BALLOON-TIPPED CATHETERS

Fidel H. Silva, 967 E. Center Fork Cir., Sandy, Utah 84094, and Dwayne R. Westenskow, 3439 Winesap, Salt Lake City, Utah 84121

Filed Oct. 11, 1989, Ser. No. 419,828

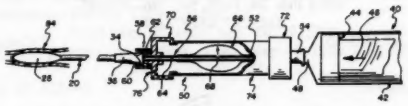
Int. Cl.[5] A61M *29/02*

U.S. Cl. 606—194 **15 Claims**

3. A safety inflation apparatus for use with a catheter including a catheter balloon disposed thereon, said catheter balloon having both a first predetermined inflation threshold pressure and a normal inflated diameter in a substantially externally

unconstrained state, said apparatus being adapted to prevent damage to a body cavity of lesser internal diameter than said normal inflated diameter of said balloon when inflation of said catheter balloon within the external constraint of said body cavity is attempted, and said apparatus comprising:

relief conduit means having fluid inlet means adapted to receive fluid and fluid outlet means adapted to dispense said fluid through said catheter to said catheter balloon within said body cavity;



a fluid relief aperture in said conduit means between said fluid inlet means and said fluid outlet means communicating the interior of said relief conduit means with the exterior thereof; and

safety reservoir means preloaded in tension against expansion, in communication with said relief conduit means through said relief aperture, and expandable at a second threshold pressure between that of said catheter balloon in its said substantially unconstrained state and that at which damage to said body cavity would normally result.

5,007,920

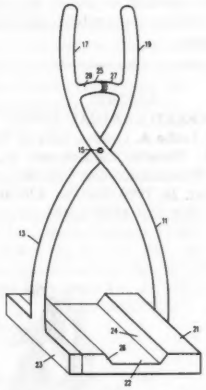
TENDON SECTIONING SUPPORT CLAMP

Randall J. Torre, 842 S. Clover, San Jose, Calif. 95128

Filed Mar. 24, 1989, Ser. No. 328,492

Int. Cl.[5] A61B *17/28*

U.S. Cl. 606—207 **7 Claims**



1. Apparatus for supporting in place a tendon or other smooth muscle during surgical procedures comprising:

first and second elongated members;

pivot means medially interconnecting said first and second elongated members;

an elongated lateral block fixedly attached to a distal end of said first elongated member, said elongated lateral block extending transversely therefrom;

an elongated support block fixedly attached to a distal end of said second elongated member, said elongated support block extending transversely therefrom being adjacent thereto and generally longitudinally parallel with said elongated lateral block, said elongated support block having an open channel formed in an upper surface thereof, said channel extending longitudinally substantially the length of said elongated support block, said channel being generally transverse to said first and second elongated members; and

ratchet means disposed between said first and second elongated members coupling said elongated members together, said lateral block and said support block disposed in spaced apart relationship within said ratchet means are disengaged, said lateral block and said support block disposed adjacent to and in contact with the other along longitudinal facing edges thereof and urged toward each other when said ratchet means is engaged.

5,007,921

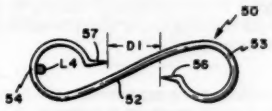
SURGICAL STAPLE

Alan W. Brown, 4 Hartley Cir., Apt. 824, Owing Mills, Md. 21117

Filed Oct. 26, 1989, Ser. No. 426,373

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—221 **5 Claims**



1. A surgical staple comprising a generally S-shaped planar member formed of relatively resilient material possessing inherent spring-back characteristics; said generally S-shaped planar member having opposite surfaces and a pair of skin piercing projections projecting transversely away from one of said opposite surfaces and generally toward each other at generally opposite looped ends of said generally S-shaped member; said pair of skin piercing projections being spaced from each other a first predetermined linear distance in a generally unstressed, neutral, operative condition of said staple; said skin piercing projections being spaced from each other a second predetermined linear distance greater than said first predetermined linear distance in a generally stressed, force-induced inoperative conditon of said staple; and said generally S-shaped planar member having spaced surface means against which forces are applied for transforming said generally planar member from its generally unstressed condition to its generally stressed condition whereby said piercing projections can be pierced into the skin on opposite sides of a wound and upon cessation of such applied forces said generally planar member automatically returns to its generally unstressed condition to automatically draw opposite margins of the wound toward each other.

5,007,922

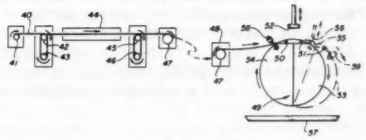
METHOD OF MAKING A SURGICAL SUTURE

Chao Chen, Edison, and Arthur Taylor, Plainfield, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Nov. 13, 1989, Ser. No. 434,399

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—228 **3 Claims**



1. A method for producing a surgical suture having a reduced diameter end portion comprising:

(a) winding a monofilament in a helical configuration;

(b) heating a portion of said monofilament to an elevated temperature;
(c) drawing said heated portion while in said helical configuration to reduce the diameter of said heated and drawn portion; and
(d) severing said monofilament to produce a suture having a reduced diameter end portion.

5,007,923

CRYSTALLINE COPOLYESTERS OF AMORPHOUS (LACTIDE/GLYCOLIDE) AND P-DIOXANONE

Rao S. Bezwada, Whitehouse Station; Hugh D. Newman, Jr., Chester, and Shalaby W. Shalaby, Lebanon, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jan. 31, 1990, Ser. No. 472,990
Int. Cl.[5] A61B *17/00*; C08G *63/00*
U.S. Cl. 606—231 **13 Claims**

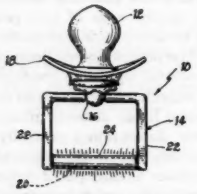
1. A crystalline copolyester of p-dioxanone and an amount of an amorphous prepolymer of lactide and glycolide effective to modify the in vivo breaking strength retention and in vivo absorption profile of the copolyester relative to the in vivo breaking strength retention and in vivo absorption profile of a p-dioxanone homopolymer.

5,007,924

LUMINESCENT PACIFIER

Tina M. Jekel, 11117 Scripps Ranch Blvd., San Diego, Calif. 92131

Filed Aug. 9, 1989, Ser. No. 391,039
Int. Cl.[5] A61J *17/00*
U.S. Cl. 606—234 **2 Claims**



1. A luminescent pacifier comprising:
(a) a nipple portion for insertion in a baby's mouth;
(b) a handle portion connected to said nipple portion for grasping by the baby, said handle portion including a crossbar;
(c) said handle having a removable luminescent clip which removably snaps onto said bar member so that said baby can find the pacifier in the dark and the clip can be removed from the pacifier and charged up while the baby uses the pacifier in the daytime.

5,007,925

PROSTHETIC DEVICES COATED WITH POLYPEPTIDES WITH TYPE IV COLLAGEN ACTIVITY

Effie C. Tsilibary, and Leo T. Furcht, both of Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Division of Ser. No. 106,858, Oct. 8, 1987, Pat. No. 4,876,332. This application Aug. 22, 1989, Ser. No. 397,012
Int. Cl.[5] A61F *2/06, 2/16, 2/24, 2/00*
U.S. Cl. 623—1 **9 Claims**

1. A prosthetic device designed for placement in vivo, comprising a surface coated with a polypeptide consisting essentially of:

met-phe-lys-lys-pro-thr-pro-ser-thr-leu-lys-ala-gly-glu-leu-arg,

thr-ala-gly-ser-cys-leu-arg-lys-phe-ser-thr-met,

asn-pro-leu-cys-pro-pro-gly-thr-lys-ile-leu,

or mixtures thereof.

5,007,926

EXPANDABLE TRANSLUMINALLY IMPLANTABLE TUBULAR PROSTHESIS

Garrett Derbyshire, Philadelphia, Pa., assignor to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Feb. 24, 1989, Ser. No. 315,465
Int. Cl.[5] A61F *2/06*
U.S. Cl. 623—1 **7 Claims**

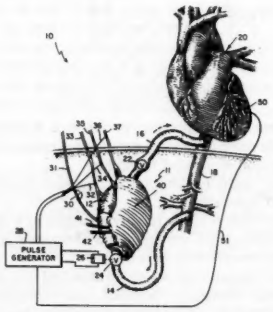
2. An implantable tubular prosthesis for insertion into a body duct comprising:
a resilient member having longitudinal sides and transverse ends, said resilient member disposed in a generally tubular configuration about a transverse axis, said resilient member comprising a flexible mesh comprising individual longitudinal and transverse wires bound together, said mesh having a plurality of openings therein, the mesh having a projecting portion for engaging with a select number of said openings to permit the selective radial expansion and locking of the tubular prosthesis in at least one fixed diameter.

5,007,927

MUSCLE-POWERED CARDIAC ASSIST DEVICE

Stephen F. Badylak; Leslie A. Geddes, both of West Lafayette, Ind., and Jerry L. Wessale, Lindenhurst, Ill., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Oct. 24, 1989, Ser. No. 426,301
Int. Cl.[5] A61F *2/16*
U.S. Cl. 623—3 **8 Claims**



1. An apparatus for enhancing circulation of blood in skeletal muscle in use for powering a cardiac assist device including a blood reservoir in fluid communication with a patient's circulatory system, wherein said skeletal muscle is positioned to compress the blood reservoir in response to a muscle contract-

ing stimulus from a pulse generator said circulation enhancing apparatus comprising

a valve positioned to control blood flow from the patient's circulatory system into the blood reservoir, and

means for activating the valve in a timed relationship to the muscle contracting stimulus.

5,007,928

INTRAOCULAR IMPLANT HAVING COATING LAYER

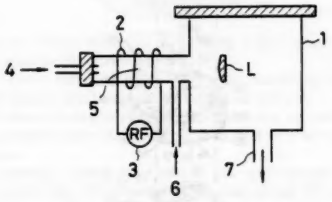
Moriyuki Okamura, Sagamihara; Ikuo Nakajima, Tokyo, and Toshiji Nishiguchi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1989, Ser. No. 357,281

Claims priority, application Japan, May 31, 1988, 63-133155

Int. Cl.[5] A61F *2/16*

U.S. Cl. 623—6 **9 Claims**



1. An intraocular implant comprising:

a lens substrate;

a coating layer formed of a first material; and

an adhesion layer disposed between said lens substrate and said coating layer, said adhesion layer comprising a second material different from said first material, said second material having at least one compound selected from the group consisting of:

(a) a hydrocarbon compound;

(b) a halogenated hydrocarbon compound;

(c) a hetero-element-containing hydrocarbon compound;

(d) an organic metal compound; and

(e) an organosilane compound.

5,007,929

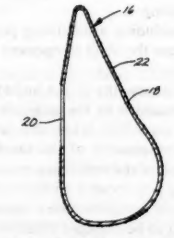
OPEN-CELL, SILICONE-ELASTOMER MEDICAL IMPLANT

Joel Quaid, Santa Barbara, Calif., assignor to Medical Products Development, Inc., Santa Barbara, Calif.

Continuation of Ser. No. 361,786, May 30, 1989, abandoned, which is a continuation of Ser. No. 927,272, Nov. 4, 1986, abandoned. This application Jul. 27, 1990, Ser. No. 559,973

Int. Cl.[5] A61F *2/10*

U.S. Cl. 623—8 **8 Claims**



1. A medical implantable device of substantially homogeneous composition comprised of silicone elastomer, said implantable device having an external surface integral therewith, at least a portion of said surface having an open-cell structure, said medical implantable device made by the method comprising the steps of:

(a) applying a layer of silicone elastomer to said medical implantable device; and

(b) applying solid particles to the surface before the layer is fully cured; and

(c) fully curing the layer; and

(d) dissolving the solid particles with a solvent that does not dissolve the silicone elastomer to any appreciable extent.

5,007,930

COMPOSITES OF UNSINTERED CALCIUM PHOSPHATES AND SYNTHETIC BIODEGRADABLE POLYMERS USEFUL AS HARD TISSUE PROSTHETICS

Linneaus C. Dorman, Midland, Mich., and Paul A. Meyers, Dublin, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 357,515, May 26, 1989, abandoned, which is a division of Ser. No. 56,496, Jun. 1, 1987, Pat. No. 4,842,604, which is a continuation of Ser. No. 914,419, Oct. 2, 1986, Pat. No. 4,698,375, which is a division of Ser. No. 702,998, Feb. 19, 1985, Pat. No. 4,636,526. This application Aug. 6, 1990, Ser. No. 563,881

Int. Cl.[5] A61F *2/28*

U.S. Cl. 623—16 **9 Claims**

1. A process for the prosthetic supplementation or replacement of hard tissue which comprises coating a conventional prosthetic device with a composite material containing from about 25 to about 75 percent by weight of an unsintered calcium phosphate biomaterial and about 75 to about 25 percent by weight of synthetic biodegradable polymer.

5,007,931

POROUS COATED PROSTHESIS

Todd S. Smith, Warsaw, Ind., assignor to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed May 4, 1990, Ser. No. 518,943

Int. Cl.[5] A61F *2/32, 2/28*

U.S. Cl. 623—23 **7 Claims**

1. A femoral component for a hip prosthesis comprising:

a head member for rotatable engagement with an acetabular component;

an elongated stem member having a longitudinal axis and an external surface and intended for cementless fixation in the intramedullary canal of a femur; and

a neck member integrally joining said head member and said stem member;

said stem member extending between a proximal portion adjacent said neck member and a distal portion distal from said neck member, and including an intermediate portion between and integral with said proximal portion and said distal portion, said intermediate portion having a plurality

of longitudinally extending channels, each of said channels defined by a bottom surface and opposed sidewalls connecting said bottom surface to said external surface; and

a porous medium for encouraging bone ingrowth fixation bonded to said bottom surface of each of said channels while remaining free of said sidewalls, said porous medium presenting an outer surface generally defined by a first surface lying

in a plane generally parallel to a plane of said external surface and second and third surfaces lying generally, respectively, in angularly spaced radial planes containing said longitudinal axis.

5,007,932

ARTIFICIAL BONE JOINT

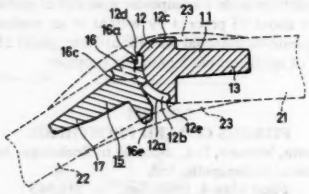
Katsutoshi Bekki; Kazuo Kondo; Yoshimasa Shibata, and Shigeo Niwa, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Continuation of Ser. No. 865,825, May 22, 1986, abandoned, which is a continuation-in-part of Ser. No. 817,116, Jan. 8, 1986, abandoned. This application Feb. 27, 1989, Ser. No. 316,526

Claims priority, application Japan, Jan. 8, 1985, 60-738[U]; Jan. 8, 1985, 60-739[U]; Jan. 8, 1985, 60-776[U]

Int. Cl.[5] A61F *2/30, 2/42*

U.S. Cl. 623—18 **23 Claims**



1. An artificial bone joint for joining first and second bones comprising:

a first member including a first elongated anchor portion having a proximal end, a distal end, and a first central longitudinal axis extending from said proximal end to said distal end in a first direction, and including a first sliding portion having a convex curved surface;

a second member including a second elongated anchor portion having a proximal end, a distal end, and a second central longitudinal axis extending from said proximal end to said distal end in a second direction, and including a second sliding portion having a concave curved surface for pivotally engaging said convex surface;

said first anchor portion including a plurality of axially spaced first recesses forming at least one pair of first anchor bosses symmetrically opposed to each other about said first central longitudinal axis having perimetrical surfaces defining a maximum cross-sectional area of the first anchor portion and each of said first recesses having a proximal end wall defined by a radially extending surface transverse to the longitudinal axis and a bottom surface inclined from a proximal to distal direction at a first angle of less than 90° with the proximal end wall to form a catching structure for said first member; and

said second anchor portion including a plurality of axially spaced second recesses forming at least one pair of second anchor bosses symmetrically opposed to each other about said second central axis having perimetrical surfaces defining a maximum cross-sectional area of the second anchor portion and each of said second recesses having a proximal end wall defined by a radially extending surface transverse to the longitudinal axis and a bottom surface inclined from a proximal to distal direction at a first angle of less than 90° with the proximal end wall to form a catching structure for said second member.

5,007,933

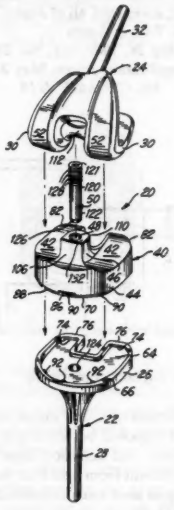
MODULAR KNEE PROSTHESIS SYSTEM

Christopher G. Sidebotham, Middletown, N.Y.; Donald E. McNulty, Warsaw, Ind., and Alan M. Lombardo, Elmwood Park, N.J., assignors to Osteonics Corp., Allendale, N.J.

Filed Jan. 31, 1989, Ser. No. 304,754

Int. Cl.[5] A61F *2/38, 2/30*

U.S. Cl. 623—20 **22 Claims**



1. In a knee prosthesis system for a prosthetic knee, the knee prosthesis system including a tibial component having a tray element, a femoral component having laterally spaced apart condylar elements, and a selectable bearing member to be carried by the tray element of the tibial component for supporting the condylar elements of the femoral component of operation of the knee prosthesis, including flexion of the prosthetic knee, the bearing member being constructed of a bearing material and having an integral eminence of bearing material projecting superiorly longitudinally upwardly from an inferior end adjacent the tibial component toward a superior end adjacent the tibial component for reception between the condylar elements of the femoral component to provide controlled restraint against excessive relative movement between the femoral component and the tibial component, control of the anterior-posterior portions of the relative movement being provided by a cam surface on the eminence and a follower on the femoral component for following the cam surface, the improvement comprising:

a stabilizing post including a stabilizing portion for projecting superiorly from the tibial component toward the femoral component; and

a recess in the eminence, the recess including a recess portion so complementary to the stabilizing portion of the stabilizing post such that when the bearing member is seated on the tray element of the tibial component, the stabilizing portion of the stabilizing post comprises means on the stabilizing post located within the recess portion of the recess in such complementary relationship with the recess portion as to be engaged positively with the material of the eminence along the recess portion so as to reinforce and stabilize the material of the eminence against forces exerted upon the eminence during operation of the knee prosthesis.

5,007,934

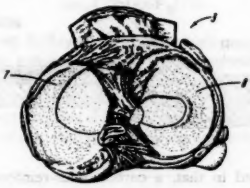
PROSTHETIC MENISCUS

Kevin R. Stone, San Francisco, Calif., assignor to ReGen Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 75,352, Jul. 20, 1987, Pat. No. 4,880,429. This application Mar. 2, 1989, Ser. No. 317,951

Int. Cl.[5] A61F *2/38*

U.S. Cl. 623—20 34 Claims



1. A prosthetic meniscus comprising a dry porous matrix of biocompatible bioresorbable fibers,

said fibers selected from the group consisting of natural polymers, and analogs and mixtures thereof,

said matrix being adapted to have an vivo an outer surface contour substantially the same as that of a natural meniscus,

said matrix having pore size in the approximate range of greater than 50 microns to less than about 500 microns,

whereby said matrix establishes an at least partially bioresorbable scaffold adapted for ingrowth of meniscal fibrochondrocytes, and wherein said scaffold and said ingrown meniscal fibrochondrocytes support natural meniscal load forces.

5,007,935

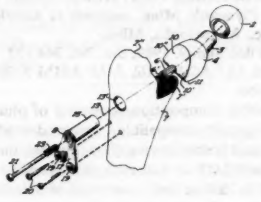
JOINT MEMBER FOR A HIP PROSTHESIS

Andre Vincent, La Hulpe, and Evrard Munting, Brussels, both of Belgium, assignors to S. A. Manufacture Belge De Gembloux, Gembloux, Belgium

Continuation of Ser. No. 929,192, Sep. 10, 1986, abandoned. This application May 12, 1989, Ser. No. 352,643

Int. Cl.[5] A61F *2/32*

U.S. Cl. 623—22 21 Claims



1. A stemless femoral prosthesis comprising:

a block shaped supporting member configured to be positioned on a V-shape resected surface in the medial surface at the proximal end of the femur;

a joint head connected to the supporting member;

an anti-rotation means extending outwardly from the supporting member;

a retaining means to be positioned on the lateral surface of the femur and operatively coupled to the anti-rotation means to exert a tensile force on the supporting member thereby urging the supporting member against the resected surfaces; and

said supporting member including supporting surfaces designed to cooperate with the V-shaped resected surface of the bone, one of the supporting surfaces positioned generally parallel to the femur axis and another of said supporting surfaces positioned essentially perpendicular thereto.

5,007,936

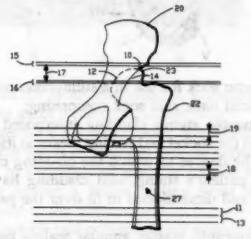
SURGICAL METHOD FOR HIP JOINT REPLACEMENT

Steven T. Woolson, Los Altos, Calif., assignor to Cemax, Inc., Fremont, Calif.

Filed Feb. 18, 1988, Ser. No. 157,259

Int. Cl.[5] A61F *2/36, 2/34, 2/32*

U.S. Cl. 623—23 6 Claims



1. A method of implanting a hip prosthesis in a patient having at least a portion of an acetabulum and a femur, the prosthesis including an acetabular component for attachment to a femoral component to provide predetermined anteversion and abduction angles, said method comprising the steps of:

A. selecting the size of said femoral and acetabular components;

B. defining a reference plane relative to said acetabulum by identifying the location of fixation points about the acetabulum according to at least one of CT scan data, PET data and NMR data, a first one of said fixation points being located at the superior rim of said acetabulum, a second of said fixation points being located on the inner wall of said acetabulum at a fixed distance distal to said first fixation point wherein said second fixation point is located at the posterior rim of said acetabulum, and a third one of said fixation points being located on the rim of said acetabulum at a fixed distance distal to said first fixation point thereby to define said reference plane for establishing an orientation for implanting said acetabular component;

C. positioning about the acetabulum a reference guide having predetermined anteversion and abduction angles relative to said reference plane;

D. reaming subchondral bone using an appropriate reaming device of said acetabulum relative to said guide thereby to form a properly oriented socket for placement of the acetabular component;

E. positioning a drill guide at first, second and third fixation points which are triangularly related to one another to establish said reference plane for said acetabular component;

F. drilling a hole through the central wall of the acetabulum at an angle relative to said reference plane;

G. placing a visual reference marker in said drilled hole;

H. visually aligning said reaming device with said reference guide during said reaming step thereby to obtain accurately the proper orientation of said acetabular component after implant thereof; and

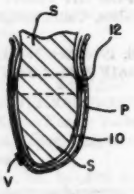
I. fixing said acetabular component in said reamed socket of said acetabulum thereby to establish the predetermined anteversion and abduction angles when functioning with said femoral component.

5,007,937

STRUCTURE FOR ENHANCED RETENTION OF ARTIFICIAL LIMBS AND METHOD OF FABRICATION

Sidney Fishman, New York, and William Lembeck, Forest Hills, both of N.Y., assignors to New York University Medical Center, New York, N.Y.

Filed Mar. 31, 1988, Ser. No. 175,828
Int. Cl.[5] A61F 2/80
U.S. Cl. 623—34 7 Claims



1. A prosthetic sock for use in a stumpreceiving socket of a patient's artificial limb, said sock comprising:

an air permeable stump cladding interposed between the stump and the socket and having means at its distal end for limiting the degree to which the cladding may be drawn onto the patient's stump, said cladding having an open proximal end dimensioned to fit over the patient's stump; and

an air impermeable, elastic, annular sealing band having an axial extent which is substantially less than that of said stump cladding said band being impregnated into and through said stump cladding so as to extend thereabout at an axial position calculated to achieve a sealing effect between the socket and the stump, at least, in a closed area at the bottom of the stump when it is inserted into said socket, the artificial limb being retained on the patient's stump substantially entirely by means of differential air pressure between the closed area and the exterior of the socket.

5,007,938

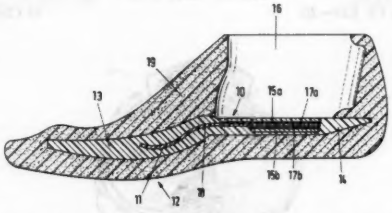
ARTIFICIAL FOOT FOR A LEG PROSTHESIS

Gregor M. Prahl, Rullstorf, Fed. Rep. of Germany, assignor to IPOS GmbH & Co. KG, Fed. Rep. of Germany

Filed Aug. 15, 1989, Ser. No. 394,093
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1989, 8908356[U]
Int. Cl.[5] A61F 2/66
U.S. Cl. 623—55 19 Claims

1. Artificial foot for a leg prosthesis, comprising a foamed plastic molded foot part and a plate-shaped reinforcing member embedded within its plantar area

said reinforcing member including at least two superimposed upper and lower leaf springs and a spacer in the form of an elastic sliding insert of polyethylene possessing a high degree of slidability between said leaf springs, an offset portion within the area of the ball of the foot and extending in the manner of a ball of the foot for supporting a foot rolling function, elastically yielding springing means having a forefoot core and a function core disposed within a calcaneal area and forming a tongue, the function core and the reinforcing member being rigidly interconnected.



characterized in that, a carbon fiber-reinforced synthetic resin leaf spring is disposed between said upper and lower leaf springs, and said synthetic resin leaf spring is configured in conformity with the rolling profile of the foot and extends as far as into the area of the offset portion.

5,007,939

ARTICLE MADE OF LACTIC ACID POLYMER CAPABLE OF BEING EMPLOYED PARTICULARLY AS A BIODEGRADABLE PROSTHESIS AND PROCESS FOR ITS MANUFACTURE

Luc Delcommune, Monfalcone, Italy, and Philippe Ghyselinck, Braine-L'Alleud, Belgium, assignors to Solvay & Cie (Societe Anonyme), Brussels, Belgium

Filed Nov. 7, 1988, Ser. No. 269,879
Claims priority, application France, Nov. 19, 1987, 87 16147
Int. Cl.[5] A61F 2/02, 2/28; A61B 17/56
U.S. Cl. 623—66 9 Claims

1. A biodegradable prosthesis comprising a molecularly oriented lactic acid polymer exhibiting at 23° C. a tensile rigidity modulus higher than 5000 MPa and a tensile resilience higher than 500 kJ/m^2.

5,007,940

INJECTABLE POLYMERIC BODIES

Eric P. Berg, Plymouth, Minn., assignor to American Medical Systems, Inc., Minnetonka, Minn.

Filed Jun. 9, 1989, Ser. No. 364,722
Int. Cl.[5] A61F 2/02, 2/12; A61M 5/00
U.S. Cl. 623—66 7 Claims

1. An injectable composition consisting of plurality of discrete physiologically-compatible, non-biodegradable, polymeric bodies, said bodies having (i) an average outside diameter of from about 0.005 to 0.20 inch, (ii) reversible deformability of about 20 to 75% of their unstressed outside diameter, and (iii) a lubricious surface.

5,007,941

PROCESS FOR DYEING LEATHER: AQUEOUS BATH CONTAINING MIXTURE OF CARBON BLACK AND ACID DYE, DIRECT DYE OR METAL COMPLEX DYE

Bruno Martinelli, Allschwil; Markus Ghezzi, Oberschwiller, both of Switzerland, and Günter Streicher, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 21, 1989, Ser. No. 454,499
Claims priority, application Switzerland, Jan. 2, 1989, 2/89
Int. Cl.[5] D06P *1/30*
U.S. Cl. 8—436 16 Claims

1. A process for dyeing leather, which comprises treating leather by the exhaust process with an aqueous liquor which contains a formulation consisting essentially of a black anionic dye selected from the group consisting of acid dyes, direct dyes and metal complex dyes and a carbon black pigment; the weight ratio of anionic dye to black pigment being from 95:5 to 50:50.

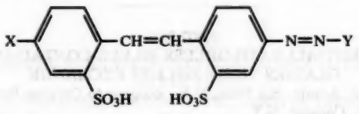
5,007,942

LIGHT-POLARIZING FILMS OR SHEETS CONTAINING STILBENE DYESTUFFS

Uwe Claussen, Leverkusen, and Friedrich W. Kröck, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 14, 1989, Ser. No. 450,757
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1988, 3843417; Jul. 1, 1989, 3921669
Int. Cl.[5] D06P *5/00*; F21V *9/14*; C09K *19/00*
U.S. Cl. 8—506 6 Claims

1. Light-polarizing films or sheets containing dyestuffs which, in the form of the free acid, conform to the formula



in which

X signifies —CN, —CF_3, halogen, R^1CONH—, —COOH, —$CONH_2$, —$CONHR^1$, —$CONR^1R^2$, —$COOR^1$, —OH, —OR:, —O—CO—R^1, —N=N—Y^1, or a substituted or unsubstituted heterocyclic radical,

R^1, R^2 signify alkyl, cycloalkyl, aryl or aralkyl, which may be interrupted by O and/or S, and

Y, Y^1 signify a substituted or unsubstituted aryl or heterocyclic radical.

5,007,943

SOL-GEL PROCESS ALUMINA ABRASIVE GRAIN BLENDS IN COATED ABRASIVE MATERIAL

Robert G. Kelly, Latham; Bernard T. Loughlin, Averill Park, and William F. McCutcheon, Rexford, all of N.Y., assignors to Norton Company, Worcester, Mass.

Filed Nov. 3, 1989, Ser. No. 431,400
Int. Cl.[5] B24B *1/00*
U.S. Cl. 51—295 12 Claims

1. Coated abrasive material having a backing member and a layer of coated abrasive adhered thereto comprising:

(a) at least one layer of a maker coat;

(b) at least one layer of abrasive grains adhered to said backing member by said maker coat; and

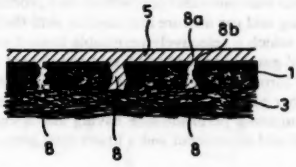
(c) a size coat on top of said at least one layer of abrasive grains said at least one layer of abrasive grains comprising a blend of sol gel process alumina abrasive grains in the proportion of from at least about 15% to about 75% by volume, and abrasive grains of alumina-zirconia abrasive grains in the amount of from about no more than 85% to about 25% by volume.

5,007,944

PROCESS FOR INCREASING THE SELECTIVITY OF ASYMMETRIC MEMBRANES

Ingo Pinnau, Hamburg, and Jan Wind, Borsbüttel, both of Fed. Rep. of Germany, assignors to GKSS Forschungszentrum Geesthacht GmbH, Geesthacht, Fed. Rep. of Germany

Filed May 11, 1987, Ser. No. 48,636
Claims priority, application Fed. Rep. of Germany, May 9, 1986, 3615649
Int. Cl.[5] B01D *53/22, 71/64*
U.S. Cl. 55—16 12 Claims



1. A method for producing integral, asymmetric membranes for separating gases in mixture, comprising:

mixing together a polyether imide membrane forming polymer which forms membranes that are permeable to at least one gas in a mixture of gases, a volatile solvent for said polymer having a lower boiling point than any other component in the mixture, and an organic liquid swelling agent in which said polymer is not soluble and which does not react with either said polymer or said solvent, to form a pourable liquid mixture;

spreading said liquid mixture to form a thin film;

exposing said thin film to air or an inert gas to form a surface skin by evaporation;

contacting said thin film with a precipitation agent to form an integral, asymmetric polyether imide membrane;

treating said membrane with an organic fluid which is a solvent for polyether imide, or a swelling agent in which said membrane is not soluble, and a selective polymer dissolved in said organic fluid selected from the group consisting of polyether imide and polyvinyl fluoride, and removing said organic fluid.

4. A method of separating gases in mixture, comprising:

contacting a mixture of gases to be separated with an integral asymmetric membrane produced by the process of claim 1, and

separating at least one gas from said gases in mixture by permeation through said membrane.

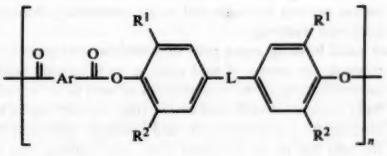
5,007,945

MEMBRANES FORMED FROM AROMATIC POLYARYLATES

Chao-Fong Tien, Macungie, and Andrew D. Surnamer, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

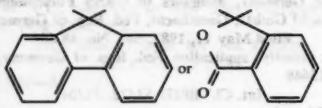
Filed Apr. 12, 1990, Ser. No. 508,763
Int. Cl.[5] B01D *53/22, 71/24*
U.S. Cl. 55—16 12 Claims

1. A semi-permeable membrane formed from a polyarylate containing polymerizable units of the formula:



Wherein Ar is a C_1–C_{20} divalent hydrocarbon radical; R^1 and

R^2 are independently halo substituents; n is an integer greater than 50; and L is a multicyclo bridging group or



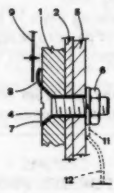
10. A process for separating a component of a gas mixture containing at least one other component, said process comprising: bringing said gas mixture into contact with the membrane of claim **1** which is selectively permeable toward one component of said gas mixture, whereby said component selectively permeates through said membrane from a feed side having both a higher partial pressure of said component and a higher total pressure to a permeate side having and a lower partial pressure of said component and a lower total pressure.

5,007,946

GRATING AND DUST-FILTER UNIT FOR CLOSING THE VENTILATING HOLE OF ELECTRONIC EQUIPMENT, WITH PROTECTIVE DEVICE AGAINST ELECTROMAGNETIC AND ELECTROSTATIC INTERFERENCE

Ezio Babini, Bologna, Italy, assignor to Fittings for Industry S.R.L., Bologna Via Di Corticella, Italy

Filed May 7, 1990, Ser. No. 519,898
Claims priority, application Italy, May 12, 1989, 4808/89[U]
Int. Cl.[5] B01D *46/10*
U.S. Cl. 55—501 **3 Claims**



1. A grating and dust-filter unit for closing a ventilating hole of electronic equipment, with protective device against electromagnetic and electrostatic interference, said unit comprising:

a grating fastened to the housing of an electronic computer, through locking means;

a metal net placed above said locking means and kept in place by a cover suited to remain snap-locked to said grating;

a small bushing, for each locking means, with said locking means passing through and being electrically connected with said bushing;

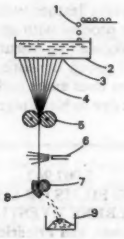
said small bushing being provided with an extension turned towards the centre of said grating, so to remain below a corresponding portion of said net as well as to be electrically connected with said net, so that said net results to be electrically connected with said housing, with possibility for said net to be detached from said housing and connected with said housing respectively by being removed therefrom and being placed thereon.

5,007,947

METHOD FOR THE MANUFACTURE CAMERA MIRROR-DRUM

Kazuei Kenmoti, Hirakata, and Masamitu Miyazaki, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Apr. 7, 1989, Ser. No. 334,837
Claims priority, application Japan, Apr. 8, 1988, 63-87471
Int. Cl.[5] C03C *25/02*
U.S. Cl. 65—3.43 **5 Claims**



1. A method for the manufacture of camera mirror-drums comprising the steps of fusing glass in a vessel, drawing the fused glass from small holes in the bottom of said vessel to form glass fibers, forming indentations at regular intervals in said glass fibers while said fibers are still in a softened state, hardening said glass fibers, chopping said glass fibers at said indentations so that the chopped fibers are of uniform length, blending the chopped glass fibers of uniform lengths into a resin at certain proportions, and injection molding the mixture to produce a camera mirror-drum.

5,007,948

ESSENTIALLY COLORLESS SILVER-CONTAINING GLASSES THROUGH ION EXCHANGE

Roger J. Araujo, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Mar. 19, 1990, Ser. No. 495,081
Int. Cl.[5] C03C *21/00*
U.S. Cl. 65—30.13 **8 Claims**

1. An essentially colorless, alkali metal oxide-Al_2O_3 and/or B_2O_3-SiO_2 glass, wherein at least a portion thereof contains silver ions produced through an ion exchange reaction wherein Ag^+ ions from an external source are exchanged with alkali metal ions in the glass, said glass having a base composition in which the alkali metal oxide and the Al_2O_3 and/or B_2O_3 are present in such concentrations that the glass possesses at atomic structure in which the fraction of non-bridging oxygen atoms is less than 0.03, and wherein up to a total of 7.5 cation percent Al_2O_3 and/or B_2O_3 can be replaced with at least one metal oxide selected from the group consisting of BeO, CaO, Ga_2O_3, La_2O_3, MgO, Nb_2O_5, Ta_2O_5, Yb_2O_3, ZnO, and ZrO_2, while maintaining the fraction of non-bridging oxygen atoms at less than 0.03.

5,007,949

SUPPORT FRAME FOR A GLASS SHEET

Denis Mathivat, and Jean-Marc Petitcollin, both of Thourotte, France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

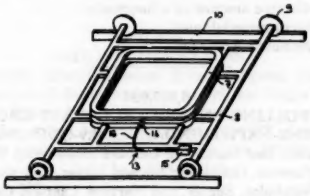
Filed Dec. 20, 1989, Ser. No. 453,938
Claims priority, application France, Dec. 21, 1988, 88 16892
Int. Cl.[5] C03B *23/03*
U.S. Cl. 65—160 **8 Claims**

1. Support frame for a glass sheet that is heated to a temperature beyond its deformation temperature, comprising:

a moving trolley, said support frame being mounted on said moving trolley and having a shape adapted to the contour of the glass sheet, said moving trolley being movable into

and out of a shaping station and to a position below an upper mold located within said shaping station, said shaping station comprising means for raising said heated glass sheet against said upper mold, wherein said moving trolley and said support frame are positioned below said upper mold when said heated glass sheet is raised against said upper mold;

a contactless detection device operatively connected to said support frame for selectively detecting the presence of



said glass sheet within an area defined by a region adjacent to said upper mold and a region adjacent to said support frame including said support frame after said glass sheet has been released from said upper mold and generating a signal indicative thereof; and

means for converting said signal received from said detection device into electrical pulses for controlling the movement of said support frame into and out of said shaping station in response to said detected signal.

5,007,950

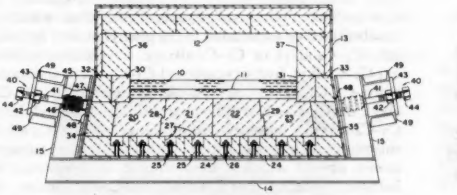
COMPRESSED, WEDGED FLOAT GLASS BOTTOM STRUCTURE

Bert K. Krushinski, Murrysville, Pa.; Robert A. Lawhon, Chehalis, Wash.; Francis A. Radecki, Ross Township, Allegheny County, Pa., and Ronald L. Schwenninger, Ridgely, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 22, 1989, Ser. No. 455,046

Int. Cl.[5] C03B *18/02*

U.S. Cl. 65—182.5 **18 Claims**



1. Apparatus for containing molten glass supported on molten metal comprising: a chamber having a bottom and side wall portions of refractory material suitable for contact with molten metal; the bottom including a row of refractory blocks in face-to-face abutment, each of the blocks having at least one of the abutting faces sloped so as to configure the block as an upwardly pointing, truncated wedge; pressure applying means external to the chamber at each end of the row bearing against a wall portion of the chamber that is sufficiently deformable to transmit pressure to the row of blocks for maintaining the row under compression so as to prevent upward displacement of the blocks due to molten metal migration around the blocks over a wide range of temperatures.

5,007,951

5-(N-3,4,5,6-TETRAHYDROPHTHALIMIDO)BENZOIC ACID THIOL ESTERS AS SELECTIVE HERBICIDES

Georg Pissiotas, Lörrach, Fed. Rep. of Germany; Hans Moser, Magden, Switzerland, and Hans-Georg Brunner, Lausen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

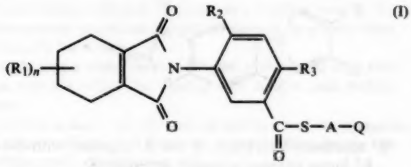
Filed Apr. 11, 1989, Ser. No. 336,399

Claims priority, application Switzerland, Apr. 20, 1988, 1449/88

Int. Cl.[5] A01N *43/34, 57/10;* **C07D** *209/04, 209/00*

U.S. Cl. 71—72 **30 Claims**

1. A 5-(N-3,4,5,6-tetrahydrophthalimido)benzoic acid thiol ester of formula I



(I)

wherein

n is 0, 1 or 2,

R_1 is C_1–C_3alkyl,

R_2 is hydrogen or halogen,

R_3 is halogen,

A is a C_1–C_4alkylene bridge, which is unsubstituted or mono- or polysubstituted by C_1–C_4alkoxy, C_1–C_4alkylthio or cyano,

Q is hydroxyl, halogen, cyano, thiocyanato, C_2–C_6alkenyl, C_2–C_6haloalkenyl, C_2–C_6cyanoalkenyl, C_2–C_{14}alkynyl, or a radical $-C(R_4)=CH-COOR_5$, $-CH(N(R_4)_2)COOR_4$, $-NR_6R_7$, $-COR_8$, $-CON(R_6)SO_2CH_3$, $-N(R_4)CH_2CN$, diallylaminocarbonyl, $-Si(R_{11})_3$, $-COOCH_2Si(CH_3)_2C_1$–C_6alkyl, $-COON=C(R_9)_2$, $-PO(OR_{12})-(O)_mR_{12}$, $-CON(R_4)SO_2C_1$–C_6alkyl, $-CON(R_4)SO_2C_1$–C_4haloalkyl, C_1–C_6alkylcarbonyl, a benzoyl or benzylcarbonyl radical whose phenyl ring is unsubstituted, mono- or polysubstituted by halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, cyano or nitro, $-COOCH(CH_3)CH_2SR_4$, $-CON(R_4)CH_2C(OC_1$–C_6alkyl$)_2$, $-COO(CH_2)_{n+1}OC_3$–C_7alkenyl, $-COOC_1$–C_4cyanoalkyl, $-COO-C_1$–C_4alkylene-$N(R_4)_2$ or C_1–C_8alkanoyloxy,

A is a C_1–C_4alkylene bridge, which is mono- or polysubstituted by C_1–C_4alkoxy, C_1–C_4alkylthio or cyano, Q also is $COOR_{13}$,

R_4 is hydrogen, C_1–C_6alkyl or C_2–C_6alkoxyalkyl,

R_5 is C_1–C_6alkyl or C_1–C_6hydroxyalkyl,

R_6 and R_7 are independently of each other hydrogen, C_1–C_6alkyl, C_2–C_6alkoxyalkyl, C_3–C_6alkenyl, C_3–C_6alkenyl, C_3–C_6alkynyl or C_3–C_6cycloalkyl, 2-furanylmethyl, 2-tetrahydrofuranylmethyl, 2-(5-methyl)-tetrahydrofuranylmethyl or 2-thienylmethyl,

R_8 is a pyrrolidino, piperidino, morpholino, thiomorpholino, 4-methylpiperazino, pyrazolidino, imidazolidino or 1,2,4-triazol radical, which radical is unsubstituted or mono- or disubstituted by C_1–C_4alkyl,

R_9 is C_1–C_6alkyl or two adjacent R_9 can form a C_2–C_6alkylene bridge,

R_{11} is C_1–C_6alkyl or C_1–C_6alkoxy,

R_{12} is hydrogen, C_1–C_6alkyl, C_2–C_6alkenyl, C_3–C_6alkynyl C_3–C_7cycloalkyl, and

m is zero or 1.

26. A method of defoliating or desiccating crops of cotton and potatoes in order to facilitate the harvesting thereof, which method comprises treating the crop, shortly before harvesting, with an effective amount of a compound of formula I according to claim **1**, or of a composition containing such a compound as the active ingredient.

5,007,952

HERBICIDAL NOVEL BENZOTHIAZOLONYL PYRROLES

Toyohiko Kume; Toshio Goto; Atsumi Kamochi; Akihiko Yanagi; Hiroshi Miyauchi, and Tadao Asami, all of Tokyo, Japan, assignors to Nihon Tokushu Noyaku Seizo K. K., Tokyo, Japan

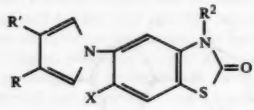
Filed Nov. 9, 1989, Ser. No. 435,223

Claims priority, application Japan, Nov. 17, 1988, 63-288796

Int. Cl.[5] A01N *43/76, 43/78, 43/86*

U.S. Cl. 71—73 8 Claims

1. A pyrrole of the formula



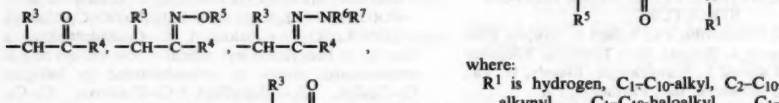
(I)

wherein

R^1 represents C_{1-4} alkyl, or one R^1 together with the other R^1 forms tetramethylene or butenylene,

X represents hydrogen or halogen,

R^2 represents hydrogen, C_{1-5} alkyl, halogeno-C_{1-5} alkyl, cyclopropylmethyl, C_{3-4} alkenyl, halogeno-C_{3-4} alkenyl, C_{3-4} alkynyl, C_{1-3} alkoxy-C_{1-2} alkyl, C_{1-3} alkylthio-C_{1-2} alkyl, C_{1-3} alkylsulfinyl-C_{1-2} alkyl, C_{1-3} alkylsulfonyl-C_{1-2} alkyl, phenylthio-C_{1-2} alkyl optionally substituted by halogen; phenylsulfinyl-C_{1-2} alkyl, phenylsulfonyl-C_{1-2} alkyl, cyano-C_{1-2} alkyl, carbamoylmethyl, thiocarbamoylmethyl, tri-C_{1-3} alkylsilylmethyl, phenyl-C_{1-2} alkyl optionally substituted by halogen, methyl or methoxy; or R^2 represents



wherein

m represents 2 or 3,

R^3 represents hydrogen or C_{1-4} alkyl,

R^4 represents C_{1-4} alkyl, or phenyl optionally substituted by halogen or C_{1-4} alkyl,

R^5 represents hydrogen, C_{1-4} alkyl, C_{3-4} alkenyl, C_{3-4} alkynyl, benzyl, C_{1-4}-alkyl-carbonyl, or C_{1-4} alkanesulfonyl,

R^6 and R^7 each represent C_{1-4} alkyl or C_{1-4} alkylcarbonyl,

R^8 represents C_{1-5} alkyl,

R^9 represents C_{1-5} alkyl or C_{1-4} alkyl-carbonyl or R^8 and R^9 together with the nitrogen atom to which they are bonded form a pyrrolidine, piperidine, N-methylpiperazine, piperazine or morpholine radical,

R^{10} represents C_{1-6} alkoxy, C_{3-7} cycloalkoxy, C_{2-3} haloalkoxy, C_{1-5} alkylamino, C_{2-8} dialkylamino, or N-C_{1-4} alkyl-N-phenylamino wherein the phenyl of the N-phenyl may be substituted by halogen and/or methyl or R^{10} represents N,N-C_{4-6} polymethyleneamino or tri-C_{1-3} alkylsilylmethoxy, and

R^{11} represents a triazole, thiazole, isoxazole, oxadiazole, thiadiazole, pyridine or pyrazine radical optionally substituted by C_{1-4} alkyl or C_{1-4} alkoxy.

7. A method of combatting unwanted vegetation which comprises applying thereto or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound according to claim 1.

5,007,953

SEED TREATMENT COMPOSITIONS

Charles C. Chollet, Caldwell, Id., assignor to Snake River Chemicals, Inc., Caldwell, Id.

Continuation-in-part of Ser. No. 859,240, May 7, 1986, abandoned, which is a continuation of Ser. No. 696,443, Jan. 30, 1985, abandoned. This application Dec. 22, 1988, Ser. No. 290,236

Int. Cl.[5] A01N *31/04, 43/78, 47/14*

U.S. Cl. 71—77 36 Claims

1. A seed treatment dust, comprising:

(a) an effective amount of a fungicide;

(b) a diluent material; and

(c) comminuted Alder bark.

5,007,954

CONTROLLING UNDESIRABLE PLANT GROWTH USING NAPHTHINDAZOLE-4,9-QUINONES

Klaus Ditrich, Bad Durkheim; Gerhard Hamprecht, Weinheim; Bruno Wuerzer, Otterstadt; Norbert Meyer, Ladenburg; Karl-Otto Westphalen, Speyer, and Hartmut Laatsch, Goettingen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

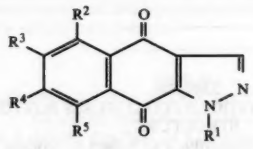
Filed Sep. 14, 1989, Ser. No. 407,318

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1988, 3831332

Int. Cl.[5] A01N *43/56, 43/90*

U.S. Cl. 71—90 6 Claims

1. A process for combating the growth of unwanted plants comprising: applying a herbicidally effective amount of a naphthindazole-4,9-quinone of the formula



where:

R^1 is hydrogen, C_1–C_{10}-alkyl, C_2–C_{10}-alkenyl, C_2–C_{10}-alkynyl, C_1–C_{10}-haloalkyl, C_1–C_{10}-hydroxyalkyl, C_2–C_{14}-alkoxyalkyl, C_2–C_{14}-alkylthioalkyl, C_3–C_7-cycloalkyl, C_1–C_4-alkylcabonyloxy-C_1–C_4-alkyl, C_1–C_4-alkylaminocarbonyloxy-C_1–C_4-alkyl, phenylaminocarbonyloxy-C_1–C_4-alkyl which is unsubstituted or substituted in the phenyl moiety by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy, phenylsulfonyloxy-C_1–C_4-alkyl which is unsubstituted or substituted in the phenyl moiety by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl-C_1–C-alkyl, hydroxycarbonyl-C_1–C_4-alkyl, aminocarbonyl-C_1–C_4-alkyl, C_1–C_4-alkylaminocarbonyl-C_1–C_4-alkyl, di-(C_1–C_4-alkyl)-aminocarbonyl-C_1–C_4-alkyl, halo-C_3–C_4-alkynyl, unsubstituted or halogen- or C_1–C_4-alkyl-substituted heteroaryl radical with one or two nitrogen atoms, phenyl which is unsubstituted or substituted by halogen, hydroxy, nitro, amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-haloalkyl, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio, or unsubstituted or halogen-substituted benzyl, and

R^2, R^3, R^4 and R^5 are identical or different and each denotes hydrogen, halogen, nitro, cyano, hydroxy, amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, C_1–C_6-alkyl, C_1–C_5-haloalkyl, C_1–C_5-alkoxy, C_1–C_5-haloalkoxy, C_1–C_5-alkylthio, C_1–C_5-haloalkylthio, C_2–C_{10}-alkoxyalkyl, carboxyl, C_2–C_6alkoxycarbonyl, C_2–C_6-alkanoyloxy, C_2–C_6-haloalkanoyloxy, C_1–C_4-alkyl-carbonylamino, C_1–C_4-alkylaminocarbonyl, di-(C_1–C_4-alkyl)-aminocarbonyl, or phenyl or heteroaryl, each of which is unsubstituted or substituted by halogen, trifluoromethyl, nitro, cyano,

amino, C_1–C_4-alkoxy, C_1–C_4-alkylthio or C_1–C_5-haloalkylthio,

and

R^3 and R^4, together with the two carbon atoms of the phenyl ring to which they are attached, form a heterocyclic ring or a benzene or naphthalene ring which is unsubstituted or substituted by halogen, nitro, cyano, amino, hydroxy, trifluoromethyl, C_1–C_5-alkyl, C_1–C_5-alkoxy, C_1–C_5-haloalkylthio, C_1–C_5-haloalkoxy or C_1–C_5-alkylthio,

to unwanted plants and/or their habitat.

5,007,955

CATIONIC HERBICIDES

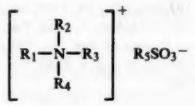
Akira Taniuchi, Kyoto; Hironori Kataoka, Ikoma, and Etsuo Ito, Kyoto, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 110,389, Oct. 20, 1987, abandoned. This application Nov. 4, 1988, Ser. No. 267,705

Int. Cl.[5] A01N *41/04*

U.S. Cl. 71—103 **18 Claims**

1. A method of combatting weeds which comprises applying thereto a herbicidally effective amount of a cationic herbicidal composition which contains as an active ingredient a quaternary ammonium salt of the general formula:



wherein R_1 is an alkyl or alkenyl group of up to 22 carbon atoms; R_2 and R_3 each is an alkyl or alkenyl group of up to 22 carbon atoms, a benzyl group or a hydroxyalkyl group of up to 4 carbon atoms; R_4 is a hydroxyalkyl group of up to 4 carbon atoms; and R_5 is an alkyl group of 1 to 22 carbon atoms, a phenyl group, a C_{1-22} alkyl- or hydroxy-substituted phenyl group, or a naphthyl group.

5,007,956

ASSEMBLED CAM SHAFT

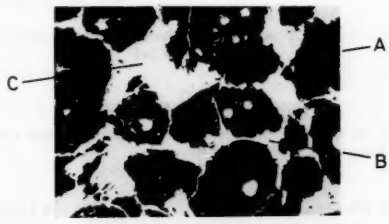
Yoshiaki Fujita, Saitama; Satoshi Kawai, and Shunsuke Takeguchi, both of Tochighi, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 35,780, Apr. 8, 1987, abandoned. This application Oct. 27, 1988, Ser. No. 263,967

Claims priority, application Japan, Apr. 11, 1986, 61-83580

Int. Cl.[5] C22C *29/04*

U.S. Cl. 75—238 **4 Claims**



1. An assembled cam shaft member whose assembled portion, except for a cam lobe is made of sintered material, said sintered material consisting essentially of 0.5 to 4.0% by weight of carbon, 0.1 to 80% by weight of phosphorus, 5 to 50% by weight of copper, at least one of 0.11 to 1% by weight of magnasese and 0.02 to 2% by weight of silicon, and the substantial balance being iron and impurities, said copper acting to braze each assembled portion to the shaft member.

5,007,957

METHOD FOR PRODUCING TUNGSTEN CARBIDE GRADE POWDERS SUITABLE FOR ISOSTATIC COMPACTION

Joseph J. Penkunas, and Theodore E. Smith, Jr., both of Sayre, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 10, 1990, Ser. No. 579,518

Int. Cl.[5] B22F *1/00*

U.S. Cl. 75—252 **5 Claims**

1. A method for producing metal carbide grade powders suitable for isostatic compaction, said method comprising:

(a) combining a binder metal powder with an esterified wax and heating said wax to a temperature above the melting point of said wax to melt said wax and maintain said wax in the molten state to form a first mixture, with the amount of wax being sufficient to result in a level of wax in the subsequently produced second mixture of no greater than about ¼% by weight;

(b) combining a metal carbide powder component with said first mixture while maintaining said wax in said molten state;

(c) forming a slurry of said second mixture and water;

(d) attritor milling said slurry at a temperature below the melting point of said wax; and

(e) removing water from the resulting attritor milled mixture to form said metal carbide grade powder.

5,007,958

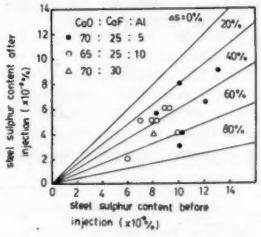
LIME-BASED INJECTION POWDER FOR STEEL-REFINING

Yeong-Huei Chung, Kaohsiung, and Der-Shyang Cheng, Kaohsiung Hsien, both of Taiwan, assignors to China Steel Corporation, Kaohsiung, Taiwan

Filed Feb. 8, 1990, Ser. No. 476,791

Int. Cl.[5] C21C *7/02, 7/04*

U.S. Cl. 75—330 **2 Claims**



1. A method of making a lime-based injection powder for use in a steel-refining, said powder having excellent waterproofing and desulphurization effects, the method comprising the steps of preparing a powder which consists of (a) more than 65% by weight of calcium oxide, (b) less than 30% by weight of fluorite, and 5–10% by weight of Al powder, and converting 5%–7% by weight of the calcium oxide into CaCO3 by reacting the calcium oxide with carbon dioxide.

5,007,959

PROCESS FOR CONVERTING OF SOLID HIGH-GRADE COPPER MATTE

Marc Reist, Notre Dame de l'Ile Perrot; Hans Persson, and Daniel Poggi, both of Pointe-Claire, all of Canada, assignors to Noranda Inc., Toronto, Canada

Filed Feb. 23, 1989, Ser. No. 313,884

Claims priority, application Canada, Apr. 29, 1988, 565626

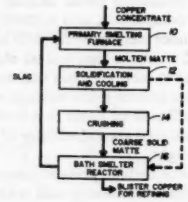
Int. Cl.[5] C22B *15/00*

U.S. Cl. 75—645 **6 Claims**

1. A process for the production of blister copper from high-grade copper matte or similar copper sulphide consisting of the steps:

(a) solidifying and cooling molten copper matte produced in a primary smelting furnace followed by crushing of the solidified matte if necessary to produce coarse particles of solid copper matte less than about fifteen centimeters in size;

(b) heating a bath smelting reactor to a temperature at which converting reactions take place and providing a bath of molten copper;



(c) continuously feeding measured quantities of said coarse particles of solid copper matte and flux into the bath smelting reactor;

(d) continuously introducing sufficient quantities of oxygen or oxygen enriched air through submerged fluid protected tuyeres such that the iron and sulphur present in the cooper matte are oxidized; and

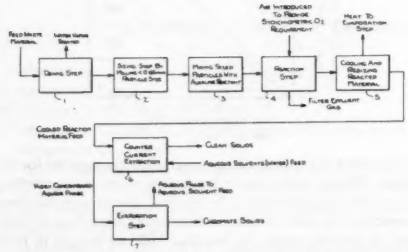
(e) periodically withdrawing molten blister copper, liquid slag and continuously withdrawing off-gas from the bath smelting reactor.

5,007,960

METHOD FOR REMOVING CHROMIUM FROM CHROMIUM CONTAINING WASTE MATERIAL

Omar Baturay, City Island, N.Y.; James E. Shirk, Jersey City, and Adam L. Sigerson, Sussex, both of N.J., assignors to Chrome Technology Inc., Trenton, N.J.

Filed Oct. 13, 1989, Ser. No. 421,136
Int. Cl.[5] C01G *37/00*
U.S. Cl. 75—743 **19 Claims**



1. A method for extracting chromium is the form of chromate from material containing chromium, said method comprising:

drying by indirect heating said material containing chromium;

sizing said dried material containing chromium to a particle size of less than 0.105 mm;

mixing said sized material containing chromium with an alkaline reactant;

reacting said mixed sized material containing chromium and alkaline reactant with oxygen by heating said mixed sized material in the presence of oxygen by indirect heating in an enclosed reaction vessel for a time and at a temperature to react substantially all the chromium to water soluble chromate thereby forming a reaction material containing water soluble chromate;

limiting the oxygen present in said enclosed reaction vessel during said reacting step to approximately stoichiometric oxygen requirements of said reaction;

removing said reaction material containing water soluble chromate from said reaction vessel and resizing and cooling said reaction material,said resized reaction material having a particle size of less than 0.105 mm; thereafter,

extracting said water soluble chromate from said reaction material using an aqueous solvent thereby providing an aqueous phase containing water soluble chromate and a clean solid phase substantially free from chromium;

evaporating said water soluble chromate containing aqueous phase thereby providing a concentrated chromate phase.

5,007,961

AQUEOUS ADDITIVE SYSTEMS, METHODS AND POLYMERIC PARTICLES

Kenneth W. Hyche, and William C. Gose, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 197,946, May 24, 1988, which is a continuation-in-part of Ser. No. 827,042, Feb. 7, 1986, Pat. No. 4,898,616, which is a continuation-in-part of Ser. No. 701,888, Feb. 15, 1985, abandoned. This application Sep. 6, 1988, Ser. No. 240,903
Int. Cl.[5] C08L *91/06;* C09D *191/06, 191/08*
U.S. Cl. 106—18 **15 Claims**

1. Aqueous application system for applying additives to polymeric particles, the system being characterized by freedom from in situ formation of color producing complexes, said system comprising

(a) an emulsified wax,

(b) in the range of 0.025 up to 60 parts by weight of surfactant per part of emulsified wax,

(c) in the range of 0.0005 up to 2 parts by weight of a base with a pH in the range of greater than 7 to equal to or less than about 12,

(d) in the range of 0.05 up to 160 parts by weight of at least one processing, stabilizing or other functional polymer additive, and

(e) at least enough water to render the resulting combination fluid.

5,007,962

BORON NITRIDE COATINGS

Timothy W. Osborne, Brooklyn, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 19, 1989, Ser. No. 409,057
Int. Cl.[5] C04B *35/68;* B28B *7/38*
U.S. Cl. 106—38.22 **16 Claims**

1. A boron nitride-containing composition for use as a film-forming coating comprising particulate boron nitride containing B_2O_3 dispersed in a solution of methyl chloroform and at least one solvent and wherein said particulate boron nitride containing B_2O_3 is from 1.5 to 50 weight percent, said methyl chloroform is from 10 to 70 weight percent and said solvent is from 5 to 30 weight percent, all based on the weight of the composition and wherein said particulate boron nitride is sized from 0.1 to 50 microns.

5,007,963

NOVEL PROCESS FOR THE PREPARATION OF LEAD MOLYBDATE PIGMENTS AND NOVEL LEAD MOLYBDATE PIGMENTS

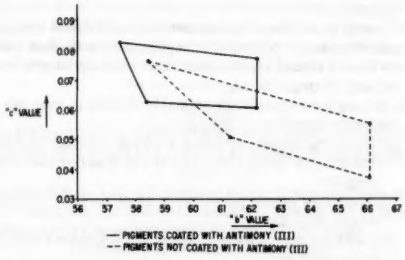
Leonardus J. H. Erkens, CK Maastricht; Gerben P. Algra, RB Maastricht; Herman J. J. M. Geurts, AX Kerkrade, and Hubertus P. A. Gielkens, BD Amstenrade/Schinnen, all of Netherlands, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 17, 1988, Ser. No. 259,083

Claims priority, application Switzerland, Oct. 22, 1987, 4133875

Int. Cl.[5] C09C *1/20*

U.S. Cl. 106—433 12 Claims



1. In a process for the preparation of a lead molybdate pigment containing lead chromate, lead sulfate, and lead molybdate by (a) reaction of an aqueous solution of a lead salt with an aqueous solution containing chromate, molybdate and sulfate salts or (b) reaction of an aqueous solution of a lead salt with an aqueous solution of chromate salt, an aqueous solution of molybdate salt and an aqueous solution of sulfate salt, the improvement comprising

conducting said reaction in the presence of 2 to 5 mol % lead molybdate seed crystals based on the total molar amount of lead chromate, lead sulfate, and lead molybdate while keeping the pH in the acid range.

5,007,964

CALCIUM CARBONATE, CALCIUM CARBONATE PIGMENT, PROCESS FOR PREPARING SAME, COATING COMPOSITION FOR INFORMATION RECORDING PAPER AND INFORMATION RECORDING PAPER

Ryogo Tsukisaka, Takarazuka; Satoshi Kondo, Nishinomiya; Toshio Kaneguchi, Kobe, and Takashi Deguchi, Nishinomiya, all of Japan, assignors to Shiraishi Central Laboratories Co., Ltd., Hyogo, Japan

Filed Jan. 13, 1989, Ser. No. 296,963

Claims priority, application Japan, Mar. 9, 1988, 63-55476

Int. Cl.[5] C09C *1/02*

U.S. Cl. 106—464 7 Claims

1. A calcium carbonate which is 25 to 55 m^2/g in BET specific surface area, 5 to 110 in the ratio of BET specific surface area (m^2/g)/mean particle size (μm), at least 120 ml/100 g in oil absorption as determined by the Ogura method and at least 1.8 g/g in water absorption.

5,007,965

MATERIAL FOR TREATING HEAVY METALS AND METAL IONS

Taiichio Sasae, Nagaokakyo, and Yoshio Taguchi, Tokyo, both of Japan, assignors to Kansai Engineering Co., Ltd., Kyoto, Japan

Filed Mar. 17, 1989, Ser. No. 324,883

Int. Cl.[5] C04B *7/02*

U.S. Cl. 106—800 3 Claims

1. A material for mixing with water containing effluents shaving harmful heavy metals and heavy metal ions therein so as to securely confine the heavy metals and ions in a solidified continuous-pore structure, comprising:

(1) a mixture of quickline and cement with the quicklime being 10 weight % to 100 weight % of the cement.

(2) based on the weight of the quicklime and cement,

(a) 0.05 to 0.35% by weight of potassium chloride, 0.03 to 0.20% by weight of magnesium chloride, 0.03 to 0.20% by weight of sodium chloride, 0.03 to 0.25% by weight of calcium chloride, 0.00002 to 0.01% by weight of cobalt chloride, 0.00002 to 0.01% by weight of citric acid, and 0.001 to 0.02% by weight of sodium sulfate; and wherein the balance is the cement-quicklime mixture.

5,007,966

CYCLODEXTRIN COMPLEXING METHOD

Allan Hedges, Crown Point, and Frank Tenbarge, Valparaiso, both of Ind., assignors to American Maize-Products Company, Stamford, Conn.

Filed Sep. 21, 1988, Ser. No. 247,251

Int. Cl.[5] C08B *30/00*

U.S. Cl. 127—34 6 Claims

1. A method for forming a complex between a cyclodextrin and a guest molecule comprising the steps of:

(a) forming a mix of a cyclodextrin having a moisture content between about 25% to about 65% by weight with a guest molecule;

(b) charging a shell of a ball mill with said mix of cyclodextrin and guest molecule and with a plurality of balls;

(c) horizontally rotating said shell with said plurality of balls and said mix therein for a period of about one half hour to about 24 hours at about 50% to about 80% of critical speed to form a complex between said cyclodextrin and said guest molecule; and

(d) scraping the sides of the ball mill during rotation of said shell to remove material that sticks to the sides of the shell.

5,007,967

SEPARATION AND PURIFICATION OF BRANCHED BETA CYCLODEXTRINS

Robert N. Ammeraal, Worth, Ill., assignor to American Maize-Products Company, Hammond, Ind.

Filed Aug. 15, 1988, Ser. No. 232,307
Int. Cl.[5] C13D 3/14; B01D 15/08
U.S. Cl. 127—46.1 5 Claims

1. A method for sequentially separating branched beta cyclodextrins having branches of varying molecular weight into fractions of branched beta cyclodextrins having similar molecular weight branches from a solution containing branched beta cyclodextrins with varying molecular weight branches comprising: passing said solution containing branched beta cyclodextrins with varying molecular weight branches through a matrix upon which an inclusion compound is attached by means of a bridging compound thereby positioning said inclusion compound about 6 to about 18 Å from the surface of the matrix; and

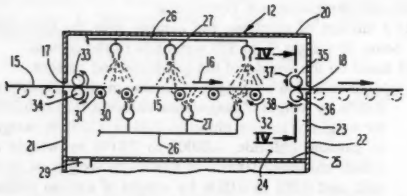
eluting sequentially by fractions branched beta cyclodextrins having similar molecular weight branches wherein longer branched beta cyclodextrins are eluted before shorter branched beta cyclodextrins.

5,007,968

PROCESS AND APPARATUS FOR TREATING ARTICLES OF SUBSTANTIAL THICKNESS

Frederick E. Coffman, and Charles H. Pelton, both of State College, Pa., assignors to Chemcut Corporation, State College, Pa.

Filed Jul. 28, 1989, Ser. No. 387,333
Int. Cl.[5] B08B 9/20, 3/00
U.S. Cl. 134—25.4 19 Claims



1. A process for chemically treating generally flat thick articles in a chamber with a liquid treatment fluid, wherein the fluid is applied to articles being treated along a path of travel for the articles, the process including the steps of:

(a) providing a substantially closed chamber for treating articles therein;

(b) delivering articles along a path of travel through the chamber;

(c) applying a liquid treatment fluid to articles being delivered along their path of travel through the chamber;

(d) providing opposed rotating cylindrical surfaced roller members normally in engagement with each other to form a closed nip therebetween when articles are not passing through the nip;

(e) positively rotatably driving at least one of the roller members of the nip;

(i) by providing a driven member having a first axis and being carried by the at least one roller member;

(ii) by providing a drive member having a second axis; and by

(iii) engaging the driven member with the drive member;

(f) engaging the articles in the nip between the opposed rotating roller members to keep treatment fluid that is being applied to articles in the chamber from passing beyond of the nip; and

(g) opening the nip by engaging the at least one of the roller members of the nip and transversely displacing the axis of the engaged roller member away from its opposed roller member by contacting the roller members with articles as the articles pass through the nip, while continuing to positively rotatably drive the at least one roller member in the same positive manner, and without separation of said axes of the drive and driven members.

8. An apparatus for chemically treating generally flat thick articles in a chamber with a liquid treatment fluid, wherein the fluid is applied to articles being treated along a path of travel for the articles, the apparatus including:

(a) means providing a substantially closed chamber for treating articles therein;

(b) means for delivering articles along a path of travel through the chamber;

(c) means for applying a liquid treatment fluid to articles being delivered along their path of travel through the chamber;

(d) means providing opposed rotating cylindrical surfaced roller members normally in engagement with each other to form a closed nip therebetween when articles are not passing through the nip;

(e) driving means positively rotatably driving at least one of the roller members of the nip;

(i) including means providing a driven member having a first axis and being carried by the at least one said roller member;

(ii) including means providing a drive member having a second axis; and

(iii) with the driven member being in engagement with the drive member;

(f) the opposed rotating roller members being disposed to provide means for engaging the articles in the nip, to keep treatment fluid that is being applied to articles in the chamber from passing beyond the nip; and

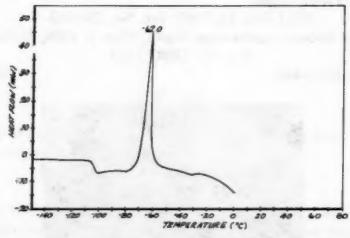
(g) the opposed roller members including means for opening the nip by engaging the at least one of the roller members of the nip with articles being treated and transversely displacing the axis of the engaged roller member away from its opposed roller member as the articles pass through the nip while said driving means continue to positively rotatably drive the at least one roller member in the same positive manner, and without separation of said axes of said drive and driven members.

5,007,969

LOW TOXICITY LIQUID SOLVENT

Patrisha A. Doscher, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 20, 1988, Ser. No. 196,903
Int. Cl.[5] C09D 9/00; C11D 7/26, 7/50; C23G 5/02
U.S. Cl. 134—38 8 Claims



1. A low toxicity solvent comprising 40–95 vol % ethylene diacetate and the remainder an alicyclic carbonate including an effective amount of ethylene carbonate, the solvent being aprotic and having a vapor pressure less than or equal to 1 mm Hg at 20° C.

6. A method of removing a residue from a solid substrate comprising the step of contacting the residue with an effective amount of the solvent of claim 1.

5,007,970

PROCESS FOR THE CLEANING OF STEAM GENERATOR HEATING SURFACES

Hellmut A. Herrmann, Kassel, and Wolfgang Hubeler, Staufenberg, both of Fed. Rep. of Germany, assignors to Schmidt'sche Heissdampf GmbH, Kassel-Bettenhausen, Fed. Rep. of Germany

Filed May 2, 1988, Ser. No. 188,314
Claims priority, application Fed. Rep. of Germany, May 2, 1987, 3714673
Int. Cl.[5] B08B *3/14*
U.S. Cl. 134—42 8 Claims

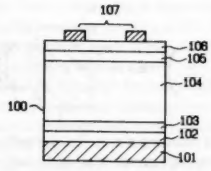
1. In a process for causing the removal of deposits from the surface of a heat exchange device by mechanical cleaning, the improvement comprising lowering the temperature of the surface to be cleaned below the softening temperature of the deposited material to be removed therefrom, at least for a period at the beginning of a cleaning cycle whereby the deposits will be hardened so as to be capable of mechanical removal.

5,007,971

PIN HETEROJUNCTION PHOTOVOLTAIC ELEMENTS WITH POLYCRYSTAL BP(H,F) SEMICONDUCTOR FILM

Masahiro Kanai, Tokyo; Tatsuyuki Aoike; Koichi Matsuda, both of Nagahama, and Soichiro Kawakami, Hikone, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1990, Ser. No. 467,537
Claims priority, application Japan, Jan. 21, 1989, 1-12509
Int. Cl.[5] H01L *31/075, 31/0368, 31/0376*
U.S. Cl. 136—258 4 Claims



1. A pin heterojunction photovoltaic element which generates photoelectromotive force by the junction of a p-type semiconductor layer, an i-type semiconductor layer and an n-type semiconductor layer, characterized in that at least one of said p-type and n-type semiconductor layers comprises a polycrystal semiconductor film comprised of boron atoms (B), phosphorus atoms (P), hydrogen atoms (H), and atoms (M) of a p-type or n-type dopant element, said polycrystal semiconductor film contains crystal grains of an average size in the range of 50 to 800 Å, and said polycrystal semiconductor film contains the hydrogen atoms (H) in an amount of 0.5 to 7 atomic %; and said i-type semiconductor layer comprises a non-single crystal semiconductor film containing silicon atoms (Si) as a matrix and at least one kind of atoms selected from the group consisting of hydrogen atoms (H) and fluorine atoms (F).

5,007,972

SAMARIUM-TRANSITION METAL MAGNET FORMATION

Kaplesh Kumar, Wellesley, and Herbert A. Newborn, Marblehead, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jun. 9, 1988, Ser. No. 204,633
Int. Cl.[5] H01F *1/08*
U.S. Cl. 148—102 10 Claims

1. A process for fabricating high strength magnets; the process comprising the following steps in the order recited:

heating a rare earth transition metal alloy comprising samarium, at a temperature of about 1180°–1200° C. for 2–24 hours;

solution treating said alloy at a temperature of about 1150° C. for 2–24 hours;

quenching said alloy to less than 50° C.;

reducing said alloy to a powder having a particle size in the range of approximately 5–10 microns;

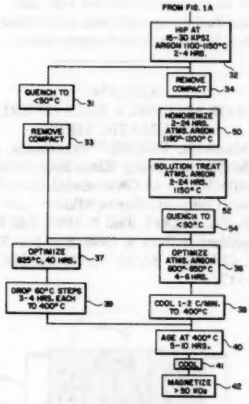
exposing said powder to a magnetic field to magnetically align said powder;

substantially immobilizing said aligned powder by cold-pressing to produce a cold compact;

hot isostatically pressing said cold compact to a densified compact;

optimizing, said densified compact by heat treatment according to one of the following sets of treatment conditions (a) and (b):

(a) a temperature of about 800°–850° C. for 4–6 hours;



(b) a temperature of approximately 825° C. for approximately 40 hours;

slow cooling said optimized densified compact as a function of its optimization treatment, as follows:

when optimizing is carried out according to optimizing treatment conditions (a) above, cooling is carried out at 1°–2° C. per minute to a temperature of approximately 400° C.; and

when optimizing is carried out according to optimizing treatment conditions (b) above, cooling is carried out in decrements of approximately 60° C. to approximately 375°–425° C., with the temperature being held for about 3–4 hours at each step;

aging said densified compact at a temperature of 375°–425° C. for approximately 5–10 hours;

cooling the aged densified compact; and

thereafter magnetizing the aged densified compact.

5,007,973

MULTICOMPONENT EXPLOSIVES

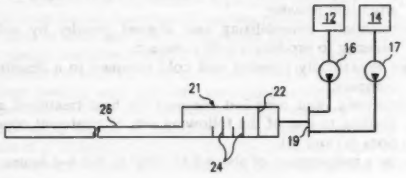
Richard E. Trapp; Gary L. Hansen, both of Salt Lake City; Robert B. Clay, Bountiful, all of Utah; Lawrence J. Dubetsky, Tamaqua, and Robert S. Olney, Bethlehem, both of Pa., assignors to Atlas Powder Company, Dallas, Tex.

Filed Oct. 12, 1989, Ser. No. 420,341
Int. Cl.[5] D03D *23/00*
U.S. Cl. 149—109.6 37 Claims

1. In a method for the formulation of an explosive composition, the steps comprising:

(a) providing a fuel component of said explosive composition comprising a suspension of a particulate metal fuel in a carrier liquid formed of a mixture of a water miscible

polyhydric alcohol and a pyrrolidone solvent and containing an amount of thixotropic thickening agent effective to provide a viscosity of said fuel component of at least 2000 centipoises at 20° C. and a shear rate of 20 rpm and no more than 100,000 centipoises at −20° C. and a shear rate of 10 rpm;



(b) providing an oxidizer component comprising an aqueous solution of an inorganic oxidizer salt; and

(c) mixing said fuel component and said oxidizer component to provide a liquid explosive composition.

5,007,974

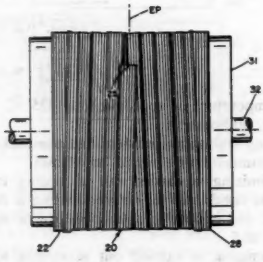
METHOD OF MAKING A BELT OVERLAY FOR PNEUMATIC TIRES

Antonnis G. Maathuis, Fouhren, Netherlands; Jürgen Spielmann, Heisdorf, Luxembourg; Klaus Beer, Stow, and Thomas R. Oare, Suffield, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 363,812, Jun. 9, 1989, Pat. No. 4,989,658. This application May 4, 1990, Ser. No. 519,083

Int. Cl.[5] B29D *30/16, 30/00;* **B60C** *9/28*

U.S. Cl. 156—117 **1 Claim**



1. A method of manufacturing an overlay structure for a pneumatic tire comprising the steps of:

a. providing a belt structure which is wrapped circumferentially about a cylinder drum which is secured to a rotatable shaft:

b. providing a ribbon which comprises an elastomeric substance containing side-by-side textile cords extending longitudinally of the ribbon;

c. supplying the ribbon to the drum by a let-off means and adhering a first end of the ribbon to a radially outermost belt ply of the belt structure in close proximity to an axial centerline of the belt structure:

d. rotating the drum and shaft while at the same time the let-off device supplying the ribbon traverses laterally to a first lateral edge of the belt structure;

e. when the ribbon is disposed radially outwardly of the first lateral edge of the belt structure stopping the lateral movement of the let-off means supplying the ribbon while the drum and shaft continue to rotate;

f. causing the let-off means supplying the ribbon to traverse laterally of the belt structure to a second lateral edge of the belt structure while the drum and shaft continue to rotate;

g. when the ribbon is disposed radially outwardly of the second lateral edge of the belt structure stopping the lateral movement of the let-off means supplying the ribbon while the drum and shaft continue to rotate;

h. causing the let-off means supplying the ribbon to traverse laterally of belt structure until the let-off means is aligned with the axial centerline of the belt structure while the drum and shaft continue to rotate; and then

i. stopping both the rotation of the drum and shaft and the lateral movement of the let-off means supplying the ribbon, cutting the ribbon, and adhering a second end of the ribbon to the underlying ribbon.

5,007,975

ULTRAVIOLET-HARDENABLE ADHESIVE AND BONDING METHOD EMPLOYING SAME

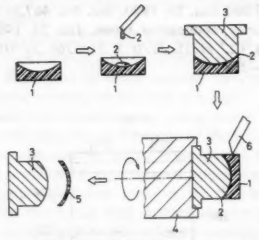
Yasuyoshi Yamamoto, Komaki; Yuzo Kaga, Nagoya; Toshiharu Yoshikawa, Nagoya, and Akira Moribe, Inazawa, all of Japan, assignors to Menicon Co., Ltd., Aichi, Japan

Filed Oct. 25, 1989, Ser. No. 426,203

Claims priority, application Japan, Nov. 13, 1986, 61-270650

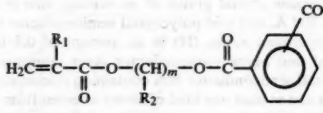
Int. Cl.[5] B32B *31/00*

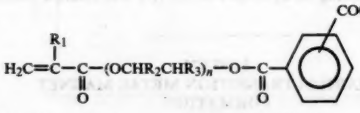
U.S. Cl. 156—154 **13 Claims**



1. A method of bonding a non-water swellable, ophthalmic-lens blank to a support member so as to subject said ophthalmic-lens blank to working and/or treatment, in producing a non-water swellable ophthalmic lens, comprising the steps of:

preparing an ultraviolet-hardenable adhesive comprising at least one photopolymerizing monomer and at least one photoinitiator, said at least one photopolymerizing monomer being selected from the group consisting of acrylates or methacrylates represented by following general formulas (I) and (II):





,wherein

R_1 is hydrogen or methyl,

R_2 is hydrogen or methyl,

R_3 is hydrogen or methyl,

m is a positive integer from 2 to 10;

n is a positive integer from 1 to 5; and

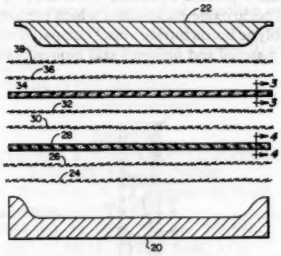
bonding said ophthalmic-lens blank to said support member with said ultraviolet-hardenable adhesive.

5,007,976

METHOD OF MAKING A HEADLINER

Marshall G. Satterfield, Johnstown; David M. Steinke, Baltimore, and Michael Blankenship, Pataskala, all of Ohio, assignors to Process Bonding, Inc., Johnstown, Ohio

Filed Oct. 16, 1989, Ser. No. 421,965
Int. Cl.[5] B32B *31/20*
U.S. Cl. 156—222 20 Claims



1. A process for forming a smooth contoured laminated panel from layers of compressible polyurethane foam, fiber glass, scrim and remay comprising,

supplying a mold having an upper part and a lower part, said parts including facing substantially mirror image, curved surfaces,

assembling on the curved surface of said mold lower part in sequence:

(a) a first layer of adhesive impregnated scrim,

(b) a first layer of open celled compressible polyurethane foam, said first polyurethane layer being impregnated with an adhesive in an amount to fill the open cells and make said polyurethane layer incompressible when heated to a curing temperature,

(c) a first layer of adhesive impregnated fiber glass,

(d) a second layer of open celled polyurethane foam,

(e) an adhesive impregnated remay, and

(f) a decorative layer,

bringing the curved surfaces of the two mold parts together to cause the assembled layers to conform to the facing mold surfaces,

heating the molds to cure the adhesive impregnating the layers, and

retracting the molds and removing the formed panel from the lower mold part.

5,007,977

METHOD AND APPARATUS FOR APPLYING A STRIP TO THE PLANAR CONTOUR-PREPARED EDGE OF A ROTATING LENS

Lutz Gottschald, AM Meerbusch, Fed. Rep. of Germany, assignor to Wernicke & Co. GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 17, 1989, Ser. No. 324,897
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1988, 3808929
Int. Cl.[5] B32B *31/18*
U.S. Cl. 156—353 8 Claims

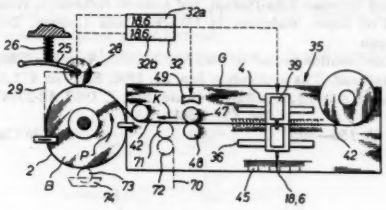
1. An apparatus for applying a strip to the planar contour-prepared edge of a lens, comprising:

support means for said lens;

a register for determining the circumference of said lens;

a perforating mechanism for perforating said strip;

a braking and arresting mechanism, for said strip, disposed between said perforating mechanism and said lens; and



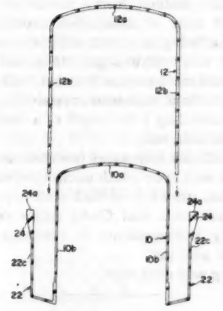
a guide roller for guiding said strip onto said lens edge, with said guide roller being spaced from said lens.

5,007,978

APPARATUS FOR TIRE RETREADING

Frederick J. Presti, Warrington, Pa., assignor to Presti Rubber Products, Inc., New Britain, Pa.

Filed Apr. 12, 1989, Ser. No. 336,758
Int. Cl.[5] B60C *5/00*; B29C *35/02*
U.S. Cl. 156—394.1 17 Claims



1. An inner curing envelope for use in a tire retreading process with an annular elastomeric outer envelope having an inwardly opening U-shaped radial cross-section for encasing a tread secured around the periphery and at least a portion of the side walls of a tire casing having annular beads, comprising:

first molded annular elastomeric means having an inwardly opening U-shaped continuous radial cross-section which in its unstressed state is form fit into a shape complementary to the shape of the inside of the tire casing, said shape having a peripheral portion and a pair of skirt portions integral therewith for contiguously contacting the interior surface of the tire casing; and

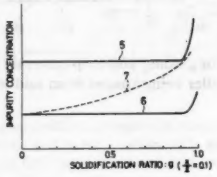
second seamless compression-molded annular elastomeric means attached to and contiguously extending outwardly from opposite ends of said skirt portions of said first annular means, each of said second annular means having an outwardly opening U-shaped radial cross-section form fit and reinforced adjacent to the tire bead and having an enlarged integral annular sealing rim for underlapping the outer envelope at the outer side walls of the tire casing.

5,007,979

METHOD OF FABRICATING GAAS SINGLE CRYSTAL

Seiji Mizuniwa; Akio Hattori; Tooru Kurihara, all of Hitachi; Seigi Aoyama, Kita-Ibaraki, and Konichi Nakamura, Hitachi, all of Japan, assignors to Hitachi Cable Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 235,063, Aug. 22, 1988, abandoned. This application Jan. 26, 1990, Ser. No. 471,190
Claims priority, application Japan, Sep. 7, 1987, 62-221876
Int. Cl.[5] C30B *11/06*
U.S. Cl. 156—605 36 Claims



1. A method of fabricating an undoped or impurity-doped semi-insulating GaAs single crystal with use of a silica boat, comprising the steps of:

(A) preparing a melt of GaAs in the silica boat, said melt containing Si as an impurity;

(B) maintaining a seed crystal in said boat at a seed crystal side;

(c) in the presence of an oxygen source, letting said melt stand for a period of time sufficient to allow oxygen near said melt to dissolve in said melt;

(D) solidifying said melt gradually from the side opposite said seed crystal toward said seed crystal side to form a polycrystalline material from a portion of said melt and to form a melt zone of unsolidified material, said gradual solidification being at a rate sufficient to cause oxygen dissolved in said melt to segregate in said melt zone;

(E) seeding said melt zone when said melt zone reaches a melt zone width at said seed crystal side, said melt zone width not exceeding $\frac{1}{2}$ the length of a GaAs single crystal formed from said melt;

(F) moving said melt zone away from said seed crystal while keeping the melt zone width unchanged such that a GaAs single crystal grows from said seed crystal behind said moving melt zone, said GaAs single crystal having a substantially homogeneous Si concentration along its longitudinal axis; and

(G) solidifying said melt zone.

5,007,980

LIQUID ENCAPSULATED ZONE MELTING CRYSTAL GROWTH METHOD AND APPARATUS

Edward M. Swiggard, Vienna, Va., assignor to SFA, Inc., Hyattsville, Md.

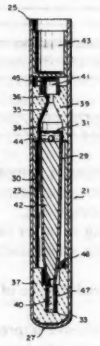
Filed Nov. 1, 1988, Ser. No. 265,533
Int. Cl.[5] B32B *00/00*
U.S. Cl. 156—620.7 24 Claims

1. A method of growing single crystals comprising the steps of:

(a) introducing a seed crystal, an amount of crystal feed material, and an amount of boric oxide encapsulant material having a melting temperature lower than the melting temperature of said crystal feed material sufficient to encapsulate said crystal feed material when melted, into a non-reactive pyrolytic boron nitride vessel;

(b) heating said vessel in a furnace to a temperature above the melting point of said boric oxide encapsulant and below the melting point of said crystal feed material and said seed crystal, and melting said encapsulant to coat said pyrolytic boron nitride vessel and encapsulate said crystal feed material, said crystal feed material corresponding substantially to the shape of said vessel;

(c) passing said vessel along a substantially vertical path through a furnace zone having a length shorter than the length of said vessel and maintained at a temperature at least equal to the melting temperature of said crystal feed material to melt said crystal feed material to form a zone of molten crystal material conforming to the shape of said vessel and separated from said vessel only by a very thin layer of boric oxide encapsulant which preferentially wets the pyrolytic boron nitride vessel compared to said molten crystal material and prevents said molten crystal material



from contacting said pyrolytic boron nitride vessel, said vessel being passed into an adjacent furnace zone maintained at a temperature above the melting temperature of said encapsulant and below the melting temperature of said crystal material to crystallize said crystal material in contact with said seed crystal so as to form a single crystal of said crystal material;

(d) tipping said vessel while maintaining said vessel at a temperature above the melting point of said boric oxide encapsulant and below the melting point of the crystallized material to decant encapsulant from said vessel; and

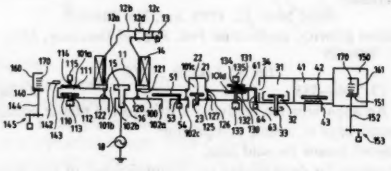
(e) recovering said single crystal of said crystal material from said vessel.

5,007,981

METHOD OF REMOVING RESIDUAL CORROSIVE COMPOUNDS BY PLASMA ETCHING FOLLOWED BY WASHING

Yoshinao Kawasaki, Kumage; Hironobu Kawahara; Yoshiaki Sato, both of Kudamatsu; Ryooji Fukuyama, Kudamatsu; Kazuo Nojiri, Higashimurayama, and Yoshimi Torii, Tachikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 9, 1990, Ser. No. 477,474
Claims priority, application Japan, Feb. 27, 1989, 1-42976
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—643 14 Claims



1. A method of processing a sample comprising the steps of:

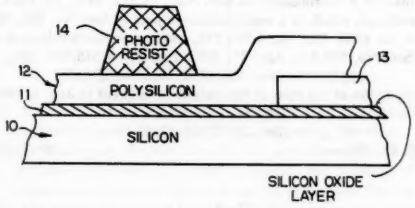
(i) etching the sample by means of a first plasma formed in a gas atmosphere,
(ii) after step (i), treating the sample by means of a second plasma to remove residual corrosive compounds formed in step (i), said second plasma being formed in a gas atmosphere different from the gas atmosphere in which the first plasma is formed,
(iii) contacting a surface of said sample etched in step (i) and treated in step (ii) with at least one liquid which effects at least one of (a) removal of residual corrosive compounds formed in step (i) which were not removed in step (ii) and (b) passivation of said surface etched in step (i) and treated in step (ii), and
(iv) after step (iii), drying the sample.

5,007,982

REACTIVE ION ETCHING OF SILICON WITH HYDROGEN BROMIDE

Len-Yan Tsou, New City, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Jul. 11, 1988, Ser. No. 217,536
Int. Cl.[5] H01L *21/306*; B44C *1/22*
U.S. Cl. 156—643 **13 Claims**



1. In a method of manufacturing semiconductor IC devices by etching comprising the steps of
(a) forming a composite structure by
(i) providing a silicon substrate,
(ii) forming a thin layer of silicon oxide on said silicon substrate,
(iii) forming a polysilicon layer on said oxide,
(iv) forming a mask of a photoresist on at least parts of said polysilicon layer,
(b) removing any surface oxides from said polysilicon layer with an oxide etching plasma, and
(c) then exposing the composite structure to a plasma containing only hydrogen bromide to selectively etch said polysilicon layer relative to said photoresist and said silicon oxide.

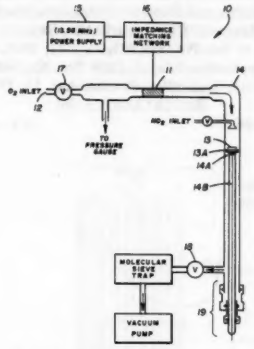
5,007,983

ETCHING METHOD FOR PHOTORESISTS OR POLYMERS

Narcinda R. Lerner, Woodside, and Theodore J. Wydeven, Jr., Sunnyvale, both of Calif., assignors to The United States of America as represented by the Administrator of National Aeronautics & Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 150,169, Jan. 29, 1988, abandoned. This application May 4, 1989, Ser. No. 347,591
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—643 **14 Claims**

1. A method for etching a sample which is a polymer or photoresist deposited on a semiconductor substrate thereof to remove said polymer or photoresist without damaging said substrate, which method comprises the steps of:
(a) locating said sample in the etching region of a plasma reactor having both a plasma region and a separate etching region spaced apart from said plasma region;
(b) locating in the etching region of said reactor a sacrificial organic solid material that has a substantially higher reactivity with the plasma-energized reactive gas generated in said plasma region than the polymer or photoresist being etched from said sample;
(c) producing a plasma in a reactive gas in said plasma region at a reactor pressure of from 0.1 to 10.0 Torr whereby said plasma-energized gas is formed;
(d) contacting said plasma-energized gas with said sacrificial



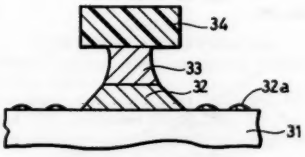
organic solid material whereby a highly reactive gas is formed said highly reactive gas having a substantially higher reaction rate with said polymer or photoresist than said plasma-energized gas; and
(e) contacting the sample with the resulting highly reactive gas at a sufficient concentration and for a sufficient time to etch said polymer or photoresist of said sample.

5,007,984

METHOD FOR ETCHING CHROMIUM FILM FORMED ON SUBSTRATE

Michinari Tsutsumi; Atsushi Endo, and Toshio Yada, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1988, Ser. No. 249,905
Claims priority, application Japan, Sep. 28, 1987, 62-245035; Oct. 7, 1987, 62-253423
Int. Cl.[5] B44C *1/22*
U.S. Cl. 156—656 **5 Claims**



1. A method for etching a chromium film formed on a substrate, comprising the steps of:
providing a chromium film formed on a substrate,
forming a metal film of a material different from the chromium film on the chromium film,
forming a resist having a predetermined pattern on said metal film,
first etching said metal film and said chromium film using a first etchant with which both said chromium film and said metal film are etched and with which the etching rate of said metal film is higher than the etching rate of said chromium film, said etchant comprising an acid consisting essentially of phosphoric acid, whereby sidewall surfaces of a remaining pattern of the chromium film are tapered, and

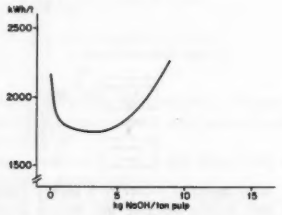
second etching said metal film using a second etchant to remove said metal film.

5,007,985

METHOD OF REDUCING THE ENERGY CONSUMPTION AT THE REFINING OF CELLULOSE CONTAINING MATERIAL

Per O. Engstrand, Täby; Lars-Ake Hammar, Farsta; Myat T. Htun, Vällingby, and Rune L. Pettersson, Stockholm, all of Sweden, assignors to STFI, Stockholm, Sweden

Continuation of Ser. No. 235,893, Aug. 11, 1988, abandoned. This application May 2, 1989, Ser. No. 346,270
Claims priority, application Sweden, Apr. 18, 1986, 8601779
Int. Cl.[5] D21B *1/16*
U.S. Cl. 162—26 **1 Claim**



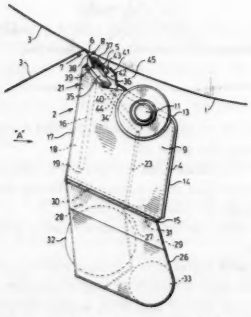
1. A method of reducing the energy consumption at the refining or beating of cellulose containing material to predetermined strength properties and with reduced shieves and resin content which comprises adding alkali to the material for neutralizing acid groups bounded to the fibre wall, said alkali being added to the material in the refining zone or immediately before the material enters the refining zone, and said alkali being added as sodium hydroxide in an amount of about 1–4 kg per ton for neutralization without excess.

5,007,986

CREPING DOCTOR WITH TWO SUCTION CHAMBERS IN THE SUPPORT BEAM

Tord G. Gustavsson, Forshaga; Frans O. S. Lyxell, and Karl T. I. Silja, both of Karlstad, all of Sweden, assignors to Valmet Paper Machinery, Inc., Helsinki, Finland

Filed Feb. 28, 1990, Ser. No. 486,155
Claims priority, application Sweden, Mar. 15, 1989, 8900912
Int. Cl.[5] D21G *3/04*
U.S. Cl. 162—281 **9 Claims**



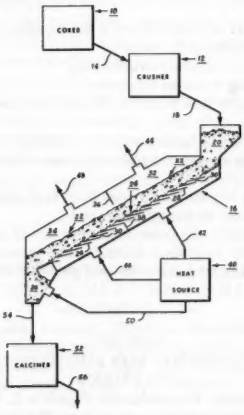
1. A creping doctor for creping a soft paper web off a yankee cylinder, comprising a supporting beam adapted for mounting closely parallel to an envelope surface of a yankee cylinder, said supporting beam being provided with an internal space, said internal space being divided into a first longitudinal suction chamber and a second longitudinal suction chamber; a doctor blade; a doctor holder mounted to the supporting beam; means for producing a subatmospheric pressure in the internal space of the supporting beam; a first suction connection connecting said first suction chamber of the supporting beam to an external dust-generating space location between the doctor blade and the soft paper web to be creped off; and a second suction connection connecting said second suction chamber of the supporting beam for providing suction to an internal dust-generating space located between the doctor blade and the envelope surface of the yankee cylinder when said creping doctor is mounted closely parallel to the yankee cylinder.

5,007,987

METHOD FOR PRODUCING NEEDLE COKE

Michael J. Block, Fullerton; Arnold E. Kelley, Orange, and Milan Skripek, Fullerton, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 14,022, Feb. 12, 1987, abandoned, which is a continuation of Ser. No. 713,332, Mar. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 488,731, Apr. 26, 1983, Pat. No. 4,521,278, and a continuation-in-part of Ser. No. 489,217, Apr. 27, 1983, Pat. No. 4,545,859. This application Nov. 22, 1988, Ser. No. 274,622
The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.
Int. Cl.[5] C10B *49/06*
U.S. Cl. 201—17 **20 Claims**



1. A method for reducing the friability of green needle coke made in a coking zone, said green needle coke having a Hardgrove Grindability Index above about 90 which method comprises:

(a) heating said green needle coke at temperatures between 875° F. and 1100° F. for a time between about 10 minutes and about 24 hours sufficient to effect a reduction in the friability of said green needle coke as determined by a decrease in said Hardgrove Grindability Index;

(b) cooling said heated green needle coke; and

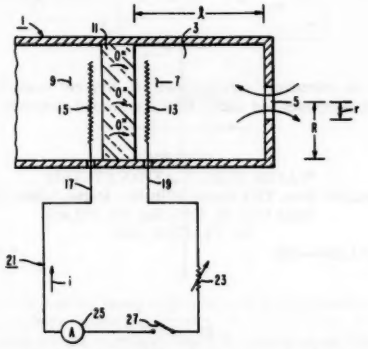
(c) recovering said cooled green needle coke without subjecting said heated or cooked green needle coke to a calcination step at a temperature above about 2000° F., said recovered green needle coke having a Hardgrove Grindability Index less than about 85.

5,007,988

METHOD FOR DETERMINING THE CONCENTRATION OF A PLURALITY OF COMBUSTIBLE GASES IN A STREAM

David H. Archer, Ross Township, and Mohammed M. Ahmed, Wilkins Township, both of Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 8, 1987, Ser. No. 95,382
Int. Cl.[5] B01D 59/40
U.S. Cl. 204—153.18 13 Claims



1. A method for determining the concentration of a plurality of combustible gases in a gas stream comprising the steps of:

(a) providing an electrochemical cell apparatus including a generally cylindrical electrochemical cell formed of a ceramic material in which a cavity is formed having a diffusion limiting port forming the entrance to said cavity, and having a process side in flow communication with a portion of said gas stream flowing into said cavity through said diffusion limiting port, a reference side in fluid flow communication with a reference gas, and an electrolyte separating said process side and said reference side of said electrochemical cell;

(b) adjusting the potential difference across said electrochemical cell to create a steady state electrical current flow whereby the flow of oxygen ions from said reference side of said electrochemical cell through said electrolyte to said process side of said cell is equal to the flow of combustible gases from said gas stream through the diffusion limiting port into said cell cavity;

(c) obtaining a number of the following electrical current flow measurements, wherein said number of electrical current flow measurements is equal to the number of combustible gases in said gas stream:

1. determining the value of said steady state electrical current flowing through said electrolyte; and

2. determining the surge of electrical current flowing through said electrolyte after said flow of electrical current is interrupted and then restored, by:

interrupting said electrical current flowing through said electrolyte for a time period, t,

after said time period, t, restoring said flow of electrical current through said electrolyte; and

measuring the surge of electrical current flowing through said electrolyte over and above said steady state electrical current flow until the electrical current flow attains its steady state value;

(d) determining the total pressure of the gases in said gas stream; and

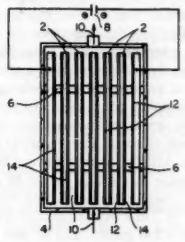
(e) converting said total pressure and said electrical current flow measurements into an indication of the concentration of each of the n combustible gases in said gas stream.

5,007,989

METHOD AND ARTICLES EMPLOYING ION EXCHANGE MATERIAL

Eric D. Nyberg, Belmont; Ken A. Klingman, Menlo Park; Jeff Curtis, San Francisco, and Ray F. Stewart, Redwood City, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 17,375, Feb. 20, 1987, Pat. No. 4,888,098, which is a continuation-in-part of Ser. No. 932,763, Nov. 19, 1986, abandoned, which is a continuation-in-part of Ser. No. 931,758, Feb. 20, 1986, abandoned. This application Oct. 17, 1989, Ser. No. 422,707
The portion of the term of this patent subsequent to Dec. 9, 2006, has been disclaimed.
Int. Cl.[5] G01N 27/26
U.S. Cl. 204—1.11 9 Claims



1. A method of replacing an ionic species in an ion exchange material containing the ionic species, which method comprises passing a current through an electrochemical cell which comprises:

(1) a first electrode;

(2) an ioon exchange material A which

(a) contains anionic species I_{1A}, and

(b) is secured to and in electrical and physical contact with the first electrode and substantially surrounds all surfaces of the first electrode;

(3) a second electrode; and

(4) an electrolyte which electrically connects the first and second electrodes;

and in which cell an electrochemical reaction takes place at the interface between the first electrode and the ion species I_{1A} to be replaced by another ionic species, substantially all the ionic species I_{2A} sogenerated passing through the ion exchange material A.

5,007,990

ELECTROPLATING PROCESS

John J. Bladon, Wayland, Mass., assignor to Shipley Company Inc., Newton, Mass.

Continuation-in-part of Ser. No. 71,865, Jul. 10, 1987, abandoned. This application Feb. 8, 1988, Ser. No. 153,357
The portion of the term of this patent subsequent to Aug. 28, 2006, has been disclaimed.
Int. Cl.[5] C25D 5/54
U.S. Cl. 204—15 15 Claims

1. A method for electroplating an article of manufacture comprising an electrically nonconductive body portion having a surface comprising metallic areas and nonmetallic nonconductive areas adjacent to and in contact with each other, said method comprising the steps of:

a. treating the surface of said article with an acid solution of a reduced noble metal electroless metal plating catalyst to form a deposit of the reduced noble metal plating catalyst on said nonconductive surface areas;

b. treating the surface of the article with a solution containing a dissolved chalcogen capable of reacting with the electroless metal plating catalyst to form a chalcogenide of said plating catalyst; and

c. metal plating the surface of the article by passing a current

between said article and an electrode immersed in a current between said article and an electrode immersed in an electolyte containing dissolved plating metal.

5,007,991

ORGANOALUMINUM ELECTROLYTES FOR THE ELECTROLYTIC DEPOSITION OF HIGH-PURITY ALUMINUM

Herbert Lehmkuhl, and Klaus-Dieter Mehler, both of Mülheim/Buhr, Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle mbH, Mulheim/Ruhr, Fed. Rep. of Germany

Filed Jun. 5, 1990, Ser. No. 533,321

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1989, 3919068

Int. Cl.[5] C25C *3/18*

U.S. Cl. 204—58.5 **12 Claims**

1. In the electrolytic deposition of highly pure aluminum employing an organoaluminum electrolyte, the improvement which comprises effecting the deposition in a toluene solution of an electrolyte at a temperature of from 90° C. to 105° C. or in a xylene solution of an electrolyte at a temperature of from 80° C. to 135° C. and employing as the electrolyte mixtures of organoaluminum complex compounds of the formula MF . 2 AlR (A), wherein M represents potassium or mixtures of potassium with a maximum of about 15% by mole of sodium, as well as trialkylaluminum AlR (B) which has not been complexed to an alkali metal fluoride in a molar ration of A:B of from 4:0.6 to 4.2, as well as a polyfunctional Lewis base of the formula $R'\text{-}OCH_2CH_2\text{-}OR''$ (C) in a molar ratio of B:C of from 1:0.5 to 1.1, wherein R is an alkyl group, and R' and R'' are alkyl, aryl or OCH_2CH_2OR''' with R''' being an alkyl or aryl group.

5,007,992

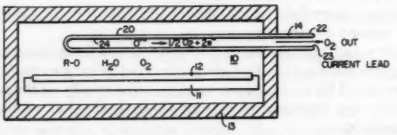
METHOD AND APPARATUS FOR REMOVING OXYGEN FROM A SEMICONDUCTOR PROCESSING REACTOR

Daniel K. Weber, 1243 Bordeaux St., Livermore, Calif. 94550

Filed May 15, 1989, Ser. No. 351,739

Int. Cl.[5] C25B *1/02;* **H01L** *21/22*

U.S. Cl. 204—59 R **20 Claims**



14. A method of removing oxygen from a process enclosure of semiconductor processing reactor comprising

disposing an electrolytic, ceramic cell within said enclosure such that said cell has a first surface exposed to said enclosure and a second surface removed from said enclosure;

disposing at least one semiconductor wafer in said enclosure;

activating said cell by heating said cell, and

passing an electric current through said cell;

whereby said cell removes oxygen from said enclosure through said first surface and releases said oxygen to said second surface.

5,007,993

ELECTROLYTIC PROCESSING APPARATUS AND METHOD WITH TIME MULTIPLEXED POWER SUPPLY

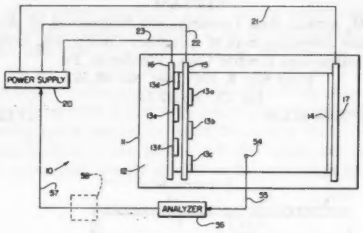
Harry F. Hull, Rau Sao Benedito, 761, 04735 Sao Paulo, and Ivan P. Da Silva, R. Dos Mainas, 30, 09790 Sao Bernardo Do Campo, SP, both of Brazil

Continuation-in-part of Ser. No. 368,666, Jun. 20, 1989. This application Jul. 5, 1989, Ser. No. 375,605

Int. Cl.[5] C25D *17/00, 21/12*

U.S. Cl. 204—228 **32 Claims**

1. Apparatus for electrolytic processing of materials, comprising an electrolytic processing bath, plural first electrodes, at least one second electrode, and computerized power supply means for supplying time multiplexed power to said electrodes



so as to selectively supply power at different times to said plural electrodes and said at least one second electrode.

5,007,994

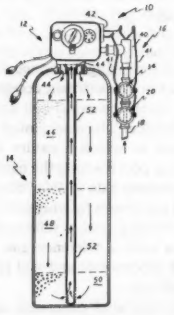
WATER PURIFICATION SYSTEM

Thomas M. Snee, 1561 Rustic Hills Dr., Eagan, Minn. 55121

Filed Nov. 18, 1988, Ser. No. 273,463

Int. Cl.[5] C02F *1/461*

U.S. Cl. 204—240 **8 Claims**



1. A water purification apparatus, comprising:

an ionization chamber containing two spaced apart ion-producing electrodes and having an inlet port and an outlet port, said inlet port being connected to an incoming water line for supplying pressurized water to be purified to said chamber, and said inlet port and said outlet port being so arranged in separate, fluid flow communication with said chamber that pressurized water to be purified from said incoming water line will pass through said inlet port and circulate about said ion-producing electrodes before flowing out of said chamber through said outlet port;

said ion-producing electrodes of said ionization chamber are made of pure copper;

a tubular connecting means having a first end and a second end, said first end communicating with said outlet port of said ionization chamber; and

a filter tank containing a first layer of granular activated carbon and a second layer comprised of gravel, said gravel including calcites mixed therewith, said filter tank having at least one inlet port and at least one outlet port and flow passage means directing water first through said layer of granular activated carbon and thereafter through said second layer, said second end of said connecting means communicating with said inlet port of said filter tank, whereby said water to be purified from said incoming water line passes through said ionization chamber before entering said filter tank, and then passes first through said layer of granular activated carbon and

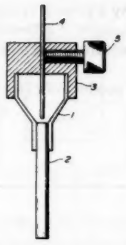
thence through said second layer before being discharged from said filter tank in a purified state.

5,007,995

DEVICE FOR ELECTROFUSION OF CELLS

Yasuo Takahashi, Drexelhill, Pa.; Kazuo Suzuki, Stony Brook, N.Y.; Toshinobu Niimura, Port Jefferson, N.Y., and Tokio Kano, Nesconset, N.Y., assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 11, 1989, Ser. No. 350,715
Int. Cl.[5] C12N *13/00*
U.S. Cl. 204—299 R 6 Claims



1. A device for fusing biological cells in a solution by applying a voltage, comprising:

a tube having an upper open end, a lower open end, and a side wall between the upper and lower open ends;

a lower electrode having a flat surface attached tightly to the lower open end of the tube;

a cover mounted tightly and detachably on the upper open end of the tube; and

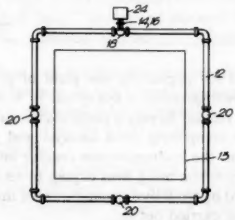
an upper electrode penetrating through the cover and extending to the vicinity of the flat surface of the lower electrode with a space remaining between the upper electrode and the side wall of the tube.

5,007,996

DETECTION SYSTEM

John R. P. Clarke, Cheadle, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Oct. 16, 1989, Ser. No. 422,120
Claims priority, application United Kingdom, Oct. 24, 1988, 8824895; Oct. 24, 1988, 8824896
Int. Cl.[5] G01N *27/403, 27/404*
U.S. Cl. 204—409 25 Claims



1. An electrochemical system for detection of a fluid component, comprising:

at least two electrodes;

an elongated element adapted to hold an electrolyte which combines with the fluid component to be detected to cause a change in an electrical parameter detectable by means of the electrodes, and disposed so that the electrodes are in contact with the electrolyte, the electrolyte being distributed along the length of the elongated element, which extends at least partly around a periphery of a zone containing a source from which said fluid component may be emitted or discharged;

means for maintaining electrolyte distributed over said elongated element; and

means for routing said element in a loop extending around the periphery of said zone such that the element is exposed to fluid flow directed outwardly from said zone and laterally towards the element at different points along its length.

5,007,997

ZEOLITE SSZ-26

Stacy I. Zones, San Francisco; Donald S. Santilli, Larkspur; James Ziemer, Hercules; Dennis L. Holtermann, Crockett; Theresa A. Pecoraro, Danville, and Robert A. Innes, San Rafael, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 172,737, Mar. 23, 1988, Pat. No. 4,910,006.
This application Dec. 20, 1989, Ser. No. 454,106
Int. Cl.[5] C10G *11/05, 45/12*
U.S. Cl. 208—46 19 Claims

1. A process for converting hydrocarbons comprising contacting a hydrocarbonaceous feed at hydrocarbon converting conditions with a zeolite having a mole ratio of an oxide selected from silicon oxide, germanium oxide and mixtures thereof to an oxide selected from aluminum oxide, gallium oxide, iron oxide, and mixtures thereof greater than about 10:1, and having the X-ray diffraction lines of Table 1.

5,007,998

PROCESS FOR REFRACTORY COMPOUND CONVERSION IN A HYDROCRACKER RECYCLE LIQUID

Adrian J. Gruia, Lake Bluff, Ill., assignor to UOP, Des Plaines, Ill.

Filed Mar. 26, 1990, Ser. No. 499,866
Int. Cl.[5] C10G *65/10*
U.S. Cl. 208—59 20 Claims

11. A catalytic hydrocracking process which comprises:

(a) contacting a hydrocarbonaceous feedstock having a propensity to form 11+ ring heavy polynuclear aromatic compounds and a liquid recycle stream in a hydrocracking zone with added hydrogen and a metal promoted hydrocracking catalyst at elevated temperature and pressure sufficient to gain a substantial conversion to lower boiling products;

(b) partially condensing the hydrocarbon effluent from said hydrocracking zone and separating the same into a hydrogen-rich gaseous stream and a first normally liquid hydrocarbonaceous stream comprising lower boiling hydrocarbons, unconverted hydrocarbons boiling above about 400° F. (204° C.) and trace quantities of 11+ ring heavy polynuclear aromatic compounds;

(c) introducing said first normally liquid hydrocarbonaceous stream recovered in step (b) into a fractionation zone to produce a second normally liquid hydrocarbonaceous stream comprising unconverted hydrocarbons boiling above about 400° F. (204° C.) and trace quantities of 11+ ring heavy polynuclear aromatic compounds, and a vaporous hydrocarbonaceous stream comprising said lower boiling hydrocarbons;

(d) introducing at least a portion of said second normally liquid hydrocarbonaceous stream comprising unconverted hydrocarbons boiling above about 400° F. (204° C.) and trace quantities of 11+ ring heavy polynuclear aromatic compounds recovered in step (c) into a 11+ ring heavy polynuclear aromatic compound conversion zone containing a zeolitic hydrogenation catalyst having pore openings in the range from about 8 to about 15 Angstroms (10^{-10} meters), a hydrogenation component and an intercalated clay component operated at conditions to selec-

tively reduce the concentration of 11+ ring heavy polynuclear aromatic compounds;

(e) condensing at least a portion of the resulting effluent from said conversion zone in admixture with said effluent from said hydrocracking zone to produce a liquid stream comprising hydrogenated hydrocarbonaceous compounds and having a reduced concentration of 11+ ring heavy polynuclear aromatic compounds compared to said unconverted hydrocarbon stream introduced into said 11+ ring heavy polynuclear aromatic compound conversion zone; and

(f) recycling at least a portion of said liquid stream comprising hydrogenated hydrocarbonaceous compounds produced in step (e) to said hydrocracking zone in step (a) as at least a portion of said liquid recycle stream.

5,007,999

METHOD FOR REDUCING SULFUR OXIDE EMISSION DURING AN FCC OPERATION

Arthur A. Chin, Cherry Hill, N.J., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Apr. 13, 1989, Ser. No. 337,680

The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.

Int. Cl.[5] C10G *11/18*

U.S. Cl. 208—113 **10 Claims**

1. In a process for reducing sulfur oxide production during an FCC cracking operation, comprising the steps of:

(a) passivating metals contaminating on an FCC catalyst by contacting the FCC catalyst with a sulfur-containing compound under conditions that enable association of the sulfur with the metals contaminants;

(b) cracking hydrocarbons with the passivated FCC catalyst in an FCC cracking zone;

(c) oxidatively regenerating the catalyst in a regeneration zone whereby the carbonaceous material deposited on the FCC catalyst in step (b) is burned off and the sulfur deposited on the FCC catalyst in step (a) is converted to sulfur oxides;

(d) reacting the sulfur oxides with a sulfur oxide adsorption additive capable of adsorbing the sulfur oxides under sulfur oxides adsorbing conditions; and

(e) converting the adsorbed sulfur oxides from step (d) to hydrogen sulfide by contacting the adsorbed sulfur oxides with a reducing gas before the regenerated FCC catalyst and sulfur oxides adsorption additive enter the FCC cracking zone;

the improvements comprising contacting the adsorbed sulfur oxides with the reducing gas in a separate treatment vessel and preventing at least 25% by weight, of the hydrogen sulfide from step (e) from entering the cracking zone.

5,008,000

CRACKING CATALYST FOR HYDROCARBON CHARGES COMPRISING AN OFFRETITE, A ZEOLITE AND A MATRIX

Christian Marcilly, Houilles; Jean-Marie Deves, and Francis Raatz, both of Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 154,258, Feb. 10, 1988. This application Mar. 15, 1990, Ser. No. 493,601

Claims priority, application France, Feb. 11, 1987, 87 01802; Nov. 30, 1987, 87 16691

Int. Cl.[5] C10G *11/05*

U.S. Cl. 208—120 **12 Claims**

1. In a process for catalytic cracking of a hydrocarbon charge, comprising subjecting said charge to cracking conditions in the presence of a catalyst, the improvement wherein the catalyst contains:

(a) 20–95% by weight of at least one matrix, selected from the group consisting of alumina, silica, magnesia, clay, titanium oxide, zirconia, combinations of at least two of these compounds and alumina-boron oxide combinations,

(b) 1–60% by weight of at least one zeolite of open structure whose main dodecagonal channels have openings of at least 7 Angströms, said zeolite of open structure being selected from the group formed of X, Y, L, omega and beta zeolites,

(c) 0.5–60% by weight of at least one dealuminated offretite whose main dodecagonal channels have openings smaller than 7 Angströms and which has a SiO_2/Al_2O_3 molar ratio from about 15 to about 500, the crystalline parameters a and c of elementary mesh ranging respectively from 1.285 to 1.315 nm for a and from 0.748 to 0.757 nm for c and has a potassium content lower than 1.5% by weight, and is prepared by a process comprising:

(1) preparing a mixture of offretite with a matrix,

(2) preparing a mixture of a zeolite of open structure with a matrix, and

(3) admixing the product of (1) with the product of (2).

5,008,001

PROCESS FOR HYDROGENATION OF HEAVY OIL

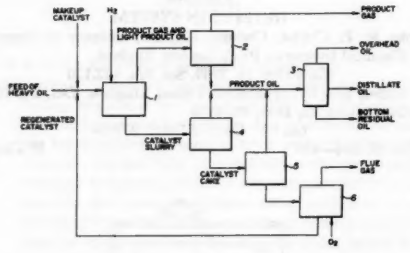
Toru Kitamura; Yoshio Ohashi; Masami Sekino, and Kenichi Murakawa, all of Sodegaura, Japan, assignors to Research Association for Petroleum Alternatives Development, Tokyo, Japan

Filed Jul. 25, 1988, Ser. No. 224,067

Claims priority, application Japan, Aug. 3, 1987, 62-192702; Mar. 7, 1988, 63-51551

Int. Cl.[5] C10G *45/00*

U.S. Cl. 208—143 **10 Claims**



1. A method for improving the yield of product oil in a process for hydrogenating a heavy oil in a suspension bed hydrogenation reactor having a particulate catalyst, wherein a catalyst slurry comprising used catalyst and product oil is withdrawn from the hydrogenation reactor and subjected to solid/liquid separation using heat drying to recover the product oil, followed by oxidative regeneration of the used catalyst, said heat drying carried out by

(a) a conductive heating-type drier at a temperature of 150° to 300° C. for a residence time of 0.25 to 5 hours with an oil content in the catalyst slurry of 10 to 60% by weight,

(b) a spray drier at a temperature of 350° to 500° C. for a residence time of 1 to 10 seconds with an oil content in the catalyst slurry of 50 to 95% by weight, or

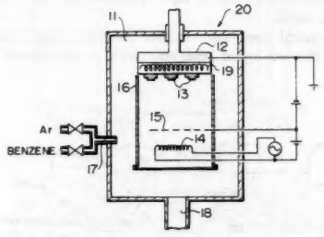
(c) a riser-type drier at a temperature of 350° to 520° C. with a catalyst content in the catalyst slurry of 5 to 50% by weight.

5,008,002

PROCESS FOR PRODUCING MOLD USED FOR OBTAINING PRESS MOLDED GLASS ARTICLE

Ken Uno, Fussa; Takuo Fujino, Akishima, and Hideki Nakamori, Kashiwa, all of Japan, assignors to Hoya Corporation and Prometron Technics Corporation, both of Tokyo, Japan

Filed Jan. 19, 1990, Ser. No. 467,248
Claims priority, application Japan, Jan. 30, 1989, 1-20545
Int. Cl.[5] B05D *3/06*; C23C *14/00*
U.S. Cl. 204—192.31 5 Claims



1. A process for producing a mold used for obtaining a press molded glass article, which comprises a step of forming an i-carbon film on a mold base for obtaining a press molded glass article, according to an ion plating method, wherein said ion plating method is effected by, in an ion plating apparatus comprising an anode electrode, a first cathode electrode, a holder for holding said mold base and a reflector extending as far as the vicinity of the mold base holder in such a shape that it surrounds the two electrodes, applying a low voltage between the anode electrode and the first cathode electrode to generate a plasma of ions of a hydrocarbon having a C/H ratio of ½ or more, and further applying a voltage of 0.5–2.5 KV between the mold base holder and the anode electrode so that the mold base holder becomes a second cathode electrode relative to the anode electrode while keeping the reflector at the same potential as the first cathode electrode to accelerate the hydrocarbon ions to the direction of the mold base which is being kept at 200°–400° C.

5,008,003

START-UP OF A HYDROREFINING PROCESS

John A. Smegal; Robert C. Ryan, and Richard M. Nash, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 5, 1989, Ser. No. 361,196
The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.
Int. Cl.[5] C10G *23/00*
U.S. Cl. 208—254 H 38 Claims

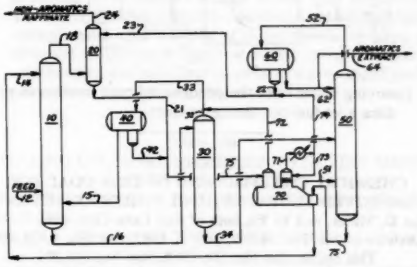
1. In a hydrorefining process which comprises contacting hydrocarbonaceous oil feed and hydrogen with a catalyst comprising a hydrogenation component selected from the group consisting of Group VIB metal component, Group VIII non-noble metal component and mixtures thereof, and an alumina-containing support, at hydrorefining conditions, the improvement which comprises heating the catalyst in substantially non-sulfided form at initial start-up from a temperature below about 450° F. to hydrorefining temperature at an average rate of less than about 10° F. per hour in the presence of hydrogen and a start-up hydrocarbonaceous oil feed having a sulfur content in the form of organosulfides of greater than 0.5 moles (basis elemental sulfur) per kilogram of start-up feed.

5,008,004

AROMATICS EXTRACTION PROCESS HAVING IMPROVED WATER STRIPPER

William H. Maier, Hoffman Estates, and Martin F. Bentham, Chicago, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 252,616, Oct. 3, 1988, Pat. No. 4,897,182. This application Dec. 29, 1989, Ser. No. 459,163
The portion of the term of this patent subsequent to Jan. 30, 2007, has been disclaimed.
Int. Cl.[5] C10G *21/28*
U.S. Cl. 208—321 16 Claims



1. A process for the recovery of an aromatic extraction solvent from a raffinate phase containing non-aromatic hydrocarbons and said aromatic extraction solvent of an extraction zone of an aromatics extraction process, said process comprising;

(a) contacting the raffinate phase with a wash water stream in a water-washing zone and recovering a raffinate product stream and a spent raffinate wash water stream comprising water and said aromatic extraction solvent;

(b) passing the spent raffinate wash water stream to a steam generation zone to provide steam and a lean solvent stream comprising said aromatic extraction solvent;

(c) contacting a process stream comprising aromatic hydrocarbons and said aromatic extraction solvent with a first portion of said steam in a steam distillation zone to provide a bottoms stream comprising said aromatic extraction solvent, and at least one of an overhead or a side-cut comprising an aqueous phase and a hydrocarbon phase comprising aromatic hydrocarbons;

(d) condensing a second portion of said steam and recycling a portion of said second portion to provide reflux in said steam generation zone; and

(e) combining said aqueous phase with the remaining portion of said second portion to provide said wash water stream.

5,008,005

INTEGRATED COKE, ASPHALT AND JET FUEL PRODUCTION PROCESS AND APPARATUS

Jer Y. Shang, McLean, Va., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Oct. 17, 1989, Ser. No. 422,479
Int. Cl.[5] C10G *1/00*
U.S. Cl. 208—407 8 Claims

1. A process for the production of coke, asphalt and jet fuel from a feed of fossil fuels containing volatile carbon compounds therein comprising the steps of:

pyrolyzing the feed in an entrained bed pyrolyzing means;

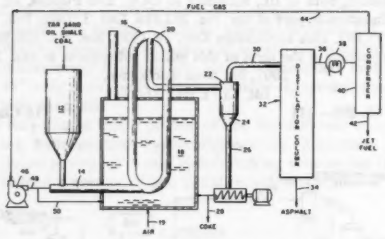
separating the volatile pyrolysis products from the solid pyrolysis products;

removing at least some coke as a result from the solid pyrolysis products;

fractionating the volatile pyrolysis products to produce an overhead stream and a bottom stream which is useful as asphalt for road pavement;

condensing the overhead stream to produce a condensed

liquid fraction and a noncondensable, gaseous fraction; and



removing water from the condensed liquid fraction to produce a jet fuel-containing product.

5,008,006

CHEMICAL CONDITIONING OF FINE COAL FOR IMPROVED FLOTATION AND PYRITE REJECTION

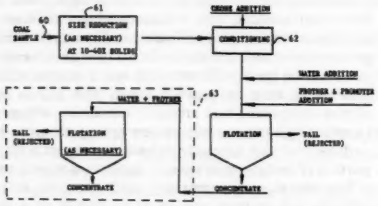
Jan D. Miller, and Yi Ye, both of Salt Lake City, Utah

Division of Ser. No. 58,909, Jun. 5, 1987, Pat. No. 4,828,686. This application Feb. 27, 1989, Ser. No. 316,081

The portion of the term of this patent subsequent to May 9, 2006, has been disclaimed.

Int. Cl.[5] B03D *1/002, 1/008, 1/018, 1/02*

U.S. Cl. 209—167 **9 Claims**



1. A method for separating ash and sulfur contaminants from feed coal in a flotation process, said method comprising, without limitation as to order, the steps of:

(a) grinding the feed coal to a particulate size;

(b) forming a slurry of the ground coal with water;

(c) mixing the slurry of coal with at least one compound selected from the group consisting of inorganic peroxy compounds, unorganic peroxides and inorganic superoxides in the absence of polymerization, said at least one compound being present in an amount sufficient to depress the sulfur and ash contaminants;

said steps being followed by the froth flotation of the coal wherein cleaned coal is collected with froth and sulfur and ash contaminants report to underflow.

5,008,007

APPARATUS FOR FILTERING INDUSTRIAL PROCESS LIQUIDS

Raymond L. Anderson, Walled Lake, Mich., assignor to H. R. Black Company, Warren, Mich.

Division of Ser. No. 338,944, Apr. 17, 1989. This application Apr. 16, 1990, Ser. No. 509,725

Int. Cl.[5] B01D *29/09, 33/04*

U.S. Cl. 210—111 **7 Claims**

1. In a filter apparatus for industrial process liquids, a tank, a continuous conveyor screen guidably and sealingly mounted within the tank and projecting therefrom, the improvement comprising:

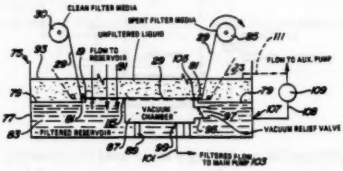
a horizontal partition spanning the tank walls and having an elongated aperture therethrough;

media sealing means upon the partition surrounding said aperture;

a continuous filter media; one side of said conveyor screen overlying the tank guidably retained for sealing engagement with said sealing means, and the other side of the conveyor screen operatively engaging said filter media, said filter media and conveyor screen spanning said aperture.

said filter media providing upon the underside of said partition an enclosed filtered liquid reservoir and upon its other side an open unfiltered liquid reservoir for receiving unfiltered liquid;

an elongated open-top vacuum chamber supported within said filtered liquid reservoir with its peripheral edge in



sealing registry with said conveyor screen and having a first outlet connected to a pump for delivering filtered liquid to a process area;

a second outlet upon said vacuum chamber communicating with said filtered liquid reservoir;

a normally closed vacuum release valve within said second outlet;

said media overlying said vacuum chamber when blocked by debris substantially stopping liquid flow through the vacuum chamber and creating a vacuum within said vacuum chamber; and

said vacuum release valve upon a preset vacuum build-up automatically opening said second outlet and simultaneously energizing said conveyor screen and media for an increment of longitudinal feed thereof until the vacuum chamber is no longer blocked with debris, re-establishing flow therethrough.

5,008,008

UNIVERSALLY ADAPTABLE POOL WATER FILTER STRUCTURE

James Lockshaw, 2401 S. Pullman, Santa Ana, Calif. 92705

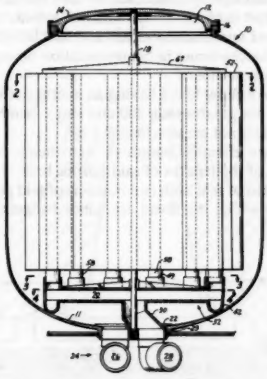
Filed Apr. 30, 1987, Ser. No. 44,592

Int. Cl.[5] B01D *29/13*

U.S. Cl. 210—169 **23 Claims**

1. A swimming pool water filter adapted for recirculating water to and from a swimming pool, said filter comprising a filtering medium of the cartridge, leaf or free particulate type, and a filter structure containing such medium in pool water filtering relation, said structure comprising a tank enclosing said filtering medium, said tank having a bottom opening; a integral molded common bottom fitting in said tank bottom opening, said fitting defining first and second ports each adapted for reverse alternate inward or outward water flow in opposed relation, said first port communicating a first portion of the tank interior immediately adjacent said port with swimming pool water beyond said tank, said second port having a continued extent vertically within said tank, a filtering medium support comprising a disc supporting said filtering medium adjacently above said tank bottom opening, said disc defining a plurality of openings for receiving filtered water from said filtering medium, said disc being coupled to said second port continued extent for outflow of received filtered water from said filtering medium through said second port when said filtering medium is a cartridge or leaf filter and for inflow of unfiltered water to said filtering medium when said filtering

medium is free particulate, and conversely said first port having an inward flow of unfiltered water when said second port



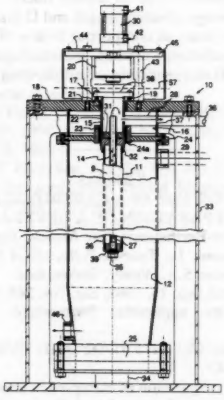
flow is outward and outward flow of filtered water when said second port is inward.

5,008,009

MECHANISM FOR FILTER CAKE REMOVAL

James L. Ciaffoni, Nevada City, Calif., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Jul. 17, 1989, Ser. No. 380,841
Int. Cl.[5] B01D *35/20*
U.S. Cl. 210—193 12 Claims



1. A mechanism for discharging filter cake from a cross flow filter element wherein sullied solution traverses through said element and deposits a filter cake on said element and clean filtrate passes through and exits from said element, said mechanism comprising:

a fixed non-flexible closure partition extending across a chamber forming an upper chamber and lower closed filter chamber, said partition having at least one aperture extending therethrough, said filter element being contained in said lower filter chamber;

an inlet pipe conveying sullied solution and attached to said lower filter chamber;

means for mounting said filter element in said lower chamber, said means including at least one filtrate exit tube movably positioned through said at least one partition aperture and in flow communication with a filter element interior portion;

an outlet housing in said upper chamber surrounding and rigidly attached to said exit tube;

spring means interposed between an annular portion of said housing and an annular member which is fixed with respect to said partition; and

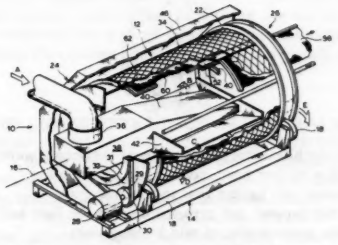
rapping means mounted independently of said outlet housing extending from a position above said outlet housing constructed and arranged to contact and drive said outlet housing downward by impact, forcedly compressing said spring means, whereby said outlet housing is caused to bottom against said spring means such that filter cake deposited on an exterior surface of said filter element in said lower chamber is shaken therefrom, and wherein said spring means, upon removal of said compressing force, is designed to release its resultant stored energy to return said housing and said filter element to a pre-rapped position spaced from said rapping means.

5,008,010

ROTATING CYLINDRICAL SCREEN WITH FINE MESH MODULAR PANELS

Herbert G. J. Langner, R.R. #1, Shallow Lake, Ont., Canada N0H 2K0

Filed May 9, 1989, Ser. No. 349,429
Int. Cl.[5] B01D *33/067*
U.S. Cl. 210—232 2 Claims



1. In a rotary screening device comprising:

a hollow cylinder journalled for rotation about its central, generally horizontally disposed, axis,

cylindrical walls of the cylinder, comprising, substantially in their entirety, screening surfaces of a screen member,

the cylinder having an inlet end and an outlet end at opposite ends of its interior,

means for rotating the cylinder,

means for directing influent to be screened into the interior of the cylinder via the inlet end and onto the screening surface,

trough means under the cylinder to collect filtrate from the influent which passes through the screen member,

wherein on rotation of the cylinder, portions of the influent which do not pass through the screen member are moved along the cylinder from the inlet end towards the discharge end,

the improvement wherein:

the screen member comprises a radially inner layer of fine mesh screening with mesh sizes in the range of 150 to 500 microns supported on a radially outer layer of supportive sheeting means having apertures therethrough larger than apertures of the fine mesh screening,

the cylinder having a framework of circular end frame members jointed by a plurality of parallel straight frame members connecting the end frame members at circumferentially spaced locations to define circumferentially spaced open segments between straight frame members,

the supportive sheeting means are permanently secured to said framework forming a cylindrical shape therewith,

longitudinally extending slot forming means on the parallel straight frame members being provided radially inwardly of the supportive sheeting means on either side of each open segment,

said fine mesh screening comprises a plurality of similar modular panels,

each panel is sized to cover one of the open segments with edge portions of the panel being axially slidably received in the slot forming means and is constructed and arranged to be separately removable by sliding axially out of the interior of the cylinder via the discharge end.

5,008,011

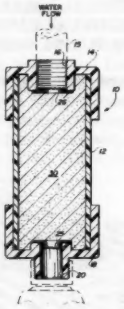
SHOWER DECHLORINATOR USING GRANULATED COPPER ALLOY FILTER MATERIAL

David T. Underwood, 1239 E. Brentrup, Tempe, Ariz. 85283

Filed Oct. 20, 1989, Ser. No. 424,823

Int. Cl.[5] E03C *1/08*; B01D *27/02*

U.S. Cl. 210—232 **15 Claims**



11. A dechlorinator for attachment between a water supply pipe and a shower head including in combination:

a housing unit having first and second ends;

first and second end caps for closing the first and second ends, respectively, of said housing unit;

first means on said first end cap for attachment to a water supply pipe;

second means on said second end cap for attachment to a shower head to deliver water from said housing unit to the shower head after the water passes through said housing unit from said first means on said first end cap; and

chlorine removal filter material in the form of randomly oriented elongated fine metallic fibers of a copper-zinc alloy substantially filling said housing unit for chemically combining with chlorine.

5,008,012

COMPACT PLASMA SEPARATOR AND AN APPARATUS CONTAINING THE SAME

Takeaki Hagihara, and Satoshi Aoki, both of Oita, Japan, assignors to Asahi Medical Co., Ltd., Tokyo, Japan

Filed May 25, 1989, Ser. No. 357,167

Int. Cl.[5] B01D *63/02*

U.S. Cl. 210—321.8 **10 Claims**

1. A compact plasma separator comprising:

a casing provided with blood introduction means for introducing blood to the casing, blood withdrawal means for withdrawing blood from the casing and at least one opening for plasma withdrawal; and

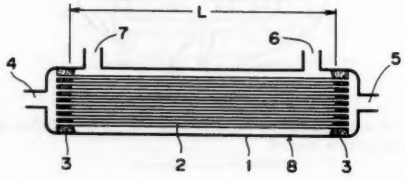
a plurality of porous hollow fibers substantially equal in length, said fibers being arranged in a substantially parallel relationship and being bonded together at both end portions thereof to form a bundle, each porous hollow fiber of said bundle having openings at both ends thereof,

said bundle being disposed in said casing along the length of said casing,

said both end portions of the hollow fibers of said bundle being fluid-tightly connected to said blood introduction means and said blood withdrawal means, respectively, said blood introduction means and said blood withdrawal means thereby being in communication through said bundle of hollow fibers,

said porous hollow fibers having an average effective length (L mm) not greater than 200 mm and a membrane surface area (S m^2) not greater than 0.3 m^2,

said average effective length (L mm) being defined as an average of the lengths of said porous hollow fibers minus the lengths of said both end portions of said porous hollow fibers at which the fibers are bonded together and fluid-



tightly connected to said blood introduction means and said blood withdrawal means, respectively,

said membrane surface area (S m^2) being defined by the formula:

$$S=n\pi DL\times 10^{-6}$$

wherein

n is the number of porous hollow fibers,

L is the average effective length and D is an average inner diameter (mm) of said porous hollow fibers,

said average effective length (L mm) and said average inner diameter (D mm) satisfying the following relationship:

$$L/D^2(mm^{-1})\geqq 2000.$$

5,008,013

FILTER FOR USE IN A CARTRIDGE FOR THE PREPARATION OF A BEVERAGE

Eric Favre, Saint-Barthelemy; Petr Masek, Yverdon, and Bernard Truchement, La Tour-de-Peilz, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Sep. 16, 1988, Ser. No. 245,755

Claims priority, application Switzerland, Oct. 1, 1987, 3815/87

Int. Cl.[5] A47J *31/00*; B01D *39/10*

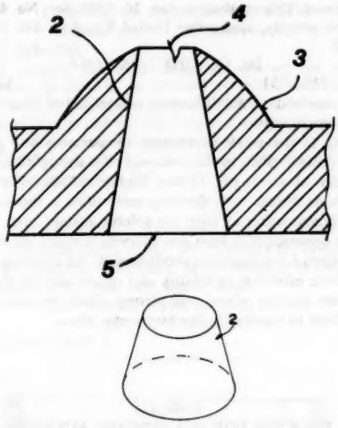
U.S. Cl. 210—482 **19 Claims**

1. A filter for preparation of extracted beverages comprising a single planar sheet of material including two planar surfaces having a plurality of uniformly distributed openings extending through the sheet and having a plurality of nipples, equal in number to the number of openings, projecting from and out of at least one of the planar surfaces to a nipple end disposed away from the planar surface from which the nipple projects, wherein each nipple is associated with one of the openings through the sheet, wherein each opening extends through each nipple, wherein each opening at the end of each nipple forms a minor base of an opening shape, wherein each opening at the other planar surface forms a major base of the opening shape and wherein the opening shape defined about the openings by the sheet and each nipple is a shape selected from a group of shapes consisting of

(i) a frustoconical shape wherein the minor base opening has a diameter of between 0.1 m and 0.3 mm and the major

base opening has a diameter of between 0.2 mm and 0.5 mm

(ii) a frustopyramidal shape wherein a diagonal of a square of the minor base opening is between 0.1 mm and 0.3 mm and wherein a diagonal of a square of the major base opening is between 0.2 mm and 0.5 mm; and



(iii) a shape in a form of an equilateral truncated tetrahedron wherein sides of a triangle of the minor base opening define an opening of between 0.1 mm and 0.3 mm and wherein sides of the major base opening define an opening of between 0.2 mm and 0.5 mm.

5,008,014

SEPARATOR

David D. Lloyd, North Avon, and Peter G. Michaluk, Gloucester, both of England, assignors to Serck Baker Limited, Gloucester, England

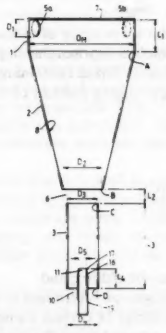
PCT No. PCT/GB88/00715, § 371 Date Mar. 27, 1990, § 102(e) Date Mar. 27, 1990, PCT Pub. No. WO89/02313, PCT Pub. Date Mar. 23, 1989

PCT Filed Sep. 1, 1988, Ser. No. 469,405

Claims priority, application United Kingdom, Sep. 5, 1987, 8720943; Sep. 5, 1987, 8720944

Int. Cl.[5] B01D *45/12*

U.S. Cl. 210—512.1 **51 Claims**



1. A separator for separating a mixture of liquids into a more dense component and a less dense component comprises an elongated tube having a circular cross-section which reduces in diameter from a wide end means for enabling substantially all of the less dense component in the central core of said tube to be moved toward said narrow end, including to a narrow end, at least one tangentially disposed inlet at or adjacent the wide end for the introduction at relatively high velocity of a mixture of liquids to be separated, the tube having a constant taper from a location adjacent the inlet towards the narrow end, the convergence angle of the tube being about 2°, at least one outlet comprising an axially disposed tube extending into the separator at the narrow end thereof for the removal of the less dense component and at least one outlet for the removal of the more dense component, positioned in the vicinity of the narrow end of the separator, and pressure control means for controlling the pressure of the more dense component in the vicinity of the outlet for the more dense component.

5,008,015

PURIFICATION OF PHOSPHORUS COMPOUNDS

Paul M. Davies, Birmingham, and Raymond A. Smith, Walsall, both of England, assignors to Albright & Wilson Limited, Warley, England

Filed Oct. 31, 1989, Ser. No. 429,389

Claims priority, application United Kingdom, Nov. 2, 1988, 8825589

Int. Cl.[5] B01D *11/04*

U.S. Cl. 210—634 **29 Claims**

1. A process for reducing the chloride content of a crude amino organic phosphonic acid which comprises contacting an aqueous feed comprising an amino organic phosphonic acid and hydrogen chloride with a liquid hydroxylic solvent to produce an organic solution containing hydrogen chloride, and an aqueous composition comprising the amino organic phosphonic acid of reduced hydrogen chloride content, and separating the aqueous composition from the organic solution.

5,008,016

LIQUID/LIQUID EXTRACTION OF GALLIUM VALUES FROM BASIC AQUEOUS SOLUTIONS THEREOF

Alfred Altorfer, Freienstein; Ernst Wohler, Seuzach, both of Switzerland, and Nicholas P. Wynn, Toronto, Canada, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Mar. 27, 1989, Ser. No. 328,673

Claims priority, application Switzerland, Mar. 25, 1988, 01155/88

Int. Cl.[5] B01D *11/00*

U.S. Cl. 210—634 **3 Claims**

1. A process for the liquid/liquid extraction and recovery of gallium values from basic aqueous solutions thereof, comprising liquid/liquid extracting such basic aqueous solution with an organic phase which comprises a substituted hydroxyquinoline gallium extractant dissolved in an organic solvent, and whereby the gallium values, as well as sodium and aluminum values, are transferred into said organic phase, separating said organic phase from said basic aqueous phase, next contacting the organic phase with a medium consisting essentially of water to convert said coextracted sodium values into caustic soda, separating such caustic soda from said organic phase, and then recovering the gallium values from said organic phase thus stripped of sodium values.

5,008,017

METHOD FOR RECOVERING METALS FROM WASTE LIQUORS

Gary G. Kiehl, Hilton, and Robert G. Surash, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1989, Ser. No. 447,943

Int. Cl.[5] C02F *1/52*

U.S. Cl. 210—710 **8 Claims**

1. In the method of recovering silver by (1) treating a waste liquor containing silver halide salts with aluminum sulfate as a flocculating agent to form a silver bearing sludge, and (2) reducing the volume of the silver bearing sludge by the addi-

tion of an acid, the improvement which comprises subsequent to step 1 mixing the silver bearing sludge with a metal bicarbonate and a metal carbonate, the weight ratio of bicarbonate to carbonate being from about ⅓ to about 3/1, the total weight of bicarbonate and carbonate being from about 1 to about 3 parts per part of silver bearing sludge, wherein said silver bearing sludge is converted to a free flowing powder.

5,008,018

PROCESS FOR THE REDUCTION IN SIZE OF THE PORES OF A FILTER MEDIUM FOR BEVERAGES

Karl Raible, Grafelfing, Fed. Rep. of Germany, assignor to Stabifix Brauerei-Technik GmbH & Co. OHG, Fed. Rep. of Germany

Filed Jan. 18, 1989, Ser. No. 298,518

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1988, 3801215; Jun. 15, 1988, 3820393

Int. Cl.[5] B01D *37/02*

U.S. Cl. 210—717 **24 Claims**

1. A process for filtering a beverage wherein a stabilized silica sol is used for reducing the size of the pores of the filter medium without sealing them comprising adding a stabilized silica sol continuously or batchwise to the beer to be filtered upstream of the filter medium through which the beer passes, in a quantity and control such that the silicic acid precipitation, which is the transition from SiO_2 primary particles to SiO_2 secondary particles, takes place before the beer leaves the filter medium but without the settling of the silicic acid secondary particle, wherein primary particle are SiO_2 particle of the silica sol and secondary particles are a silici acid hydrogel, whereby the resultant silicic acid precipitation reduces the size of the pores without sealing them.

5,008,019

DECONTAMINATION OF EARTH FORMATIONS

Paul B. Trost, Golden, Colo., assignor to Waste-Tech Services, Inc., Golden, Colo.

Filed May 15, 1989, Ser. No. 351,463

Int. Cl.[5] B01D *12/00*

U.S. Cl. 210—747 **2 Claims**

1. A decontamination process consisting essentially of displacing through a formation contaminated with organic materials fluids including amounts of an aqueous alkaline polymer solution comprising solutions selected from the group consisting of (a) sodium silicate, sodium carbonate, sodium bicarbonate, xanthan gum polymer and monochloroamine, (b) sodium carbonate, ethoxylated nonylphenol, xanthan gum polymer and sodium hypochlorite, and (c) mixtures of the components of (a) and (b); sufficient to substantially decontaminate the formation and recovering the displaced fluids.

5,008,020

TREATMENT OF DOMESTIC AND INDUSTRIAL WASTE WATERS

Robert G. Surash, Rochester, and Gary G. Kiehl, Holton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1989, Ser. No. 447,944

Int. Cl.[5] C02F *1/66*

U.S. Cl. 210—751 **7 Claims**

1. A method of treating waste water which comprises mixing the waste water with a metal bicarbonate and a metal carbonate, the weight ratio of bicarbonate to carbonate being from about 1/3 to about 3/1, the total weight of bicarbonate and carbonate being from about 1 to 3 parts per part of waste water wherein said waste water solidifies into a particulate form.

5,008,021

IN-SITU FORMATION OF SOLUBLE SILICATES FROM BIOGENETIC SILICA IN CHEMICAL FIXATION/SOLIDIFICATION TREATMENT OF WASTES

Jesse R. Conner, Darien, Ill., and Roy S. Rieber, Houston, Tex., assignors to enviroGuard, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 224,857, Jul. 27, 1988, abandoned. This application Jan. 26, 1990, Ser. No. 470,815

Claims priority, application United Kingdom, Jul. 28, 1987, 8717860

Int. Cl.[5] C02F *1/68, 11/14*

U.S. Cl. 210—751 **14 Claims**

1. A method of solidification and chemical fixation of a waste comprising:

adding to the waste at ambient-temperature and pressure biogenetic silica in the presence of a strong alkali on the order of about pH 12 and higher sufficient to form a soluble silicate with the biogenetic silica in the waste and sufficient water to form the soluble silicate, and

in the presence of at least one polyvalent metal ion sufficient to form a cementitious product with the resulting soluble silicate effective to solidify and chemically fix the liquid waste and to allow said strong alkali to continuously reform to react with the biogenetic silica.

5,008,022

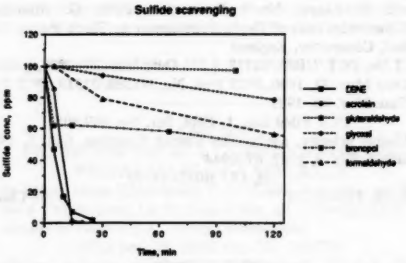
PROCESS FOR SCAVENGING SULFIDES

Jonathan Leder, Flemington, N.J., assignor to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 251,362, Sep. 30, 1988, Pat. No. 4,844,877. This application Mar. 27, 1989, Ser. No. 328,878

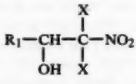
Int. Cl.[5] B01D *57/00;* **B08B** *9/02*

U.S. Cl. 210—755 **24 Claims**



1. A process for the scavenging of at least one sulfide from solids and liquids which comprises the steps of:

(a) contacting a solid or liquid containing at least one sulfide with a sulfide-scavenging amount of a dihalonitroalkanol of the formula:



wherein:

X represents bromo or chloro; and

R_1 represents hydrogen or substituted or unsubstituted alkyl or aryl of up to about 18 carbon atoms, and wherein any substituents are selected from the group consisting of X, hydroxyl or lower alkyl; and

(b) allowing said dihalonitroalkanol to react with said sulfide.

5,008,023

BIOCIDAL COMPOSITIONS AND USE THEREOF CONTAINING A SYNERGISTIC MIXTURE OF GLUTARALDEHYDE AND 2-(DECYLTHIO) ENTHANAMINE

John T. Conlan, Ventura, Calif., and Wilson K. Whitekettle, Conroe, Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 13, 1990, Ser. No. 566,637
Int. Cl.[5] C02F 1/50; A01N 33/08
U.S. Cl. 210—764 5 Claims

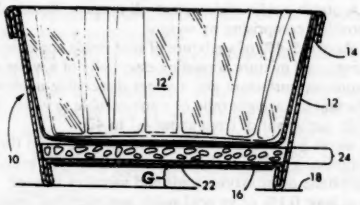
1. A method for controlling the growth of *Klebsiella pneumoniae* bacteria in an aqueous system which comprises adding to said system from about 0.1 to 200 parts per weight of a composition per one million parts per weight of said aqueous system, said composition comprising a synergistic mixture of (a) glutaraldehyde and (b) 2-(decylthio) ethanamine ratio of (a) to (b) being from about 285:1 to 1.11:1.

5,008,024

MICROWAVE CORN POPPING PACKAGE

James D. Watkins, Prior Lake, Minn., assignor to Golden Valley Microwave Foods Inc., Edina, Minn.

Filed Mar. 22, 1990, Ser. No. 497,190
Int. Cl.[5] H05B 6/80
U.S. Cl. 219—10.55 E 5 Claims



1. A nestable and disposable corn-popping package which requires no manipulation prior to popping corn in a microwave oven comprising,

a tub-shaped container comprising a sheet of stiff or semi-flexible paper or paperboard closed upon itself in the form of an upright tube which defines upstanding side walls that slope outwardly toward the top to permit nesting of a plurality of such packages within one another during shipment and storage, the side wall terminates at the top in a free edge which defines an upper open wide mouth for the package,

the side wall has a lower edge which rests on the floor of the microwave oven during cooking,

a generally horizontal bottom wall having an edge connected to the side wall at an elevation spaced upwardly from the bottom edge of the side wall to define an upper food containing compartment and a lower compartment within the confines of the side wall between the bottom wall of the package and the floor of the microwave oven,

a layer of microwave interactive suseptor material connected to the bottom wall and being distributed thereacross,

the lower edge of the side wall is substantially continuous and uninterrupted to provide sealing engagement with the floor of the microwave oven to define a sealed compartment containing air which during cooking becomes heated above the temperature of the surrounding air in the oven,

a layer of popcorn resting on the bottom wall within the upper compartment of the tub in heat conductive relationship with the suseptor and,

a flexible cover formed from a microwave transparent material having a peripheral edge sealed to the upper wide mouth,

said flexible cover being secured only to the upper free edge of the side wall and depending downwardly therefrom into the package, the flexible cover conforming to the inner aspect of the side wall and conforming substantially to the upper surface of the popcorn to provide a hollow space of substantial size within the package into which a similar container can be nested during stacking of said containers.

5,008,025

SULFONATE-CONTAINING POLYMER/POLYANIONIC CELLULOSE COMBINATION FOR HIGH TEMPERATURE/HIGH PRESSURE FILTRATION CONTROL IN WATER BASE DRILLING FLUIDS

John Hen, Skillman, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 16, 1989, Ser. No. 437,419
Int. Cl.[5] C09K 7/02
U.S. Cl. 252—8.51 25 Claims

11. A composition for improving filtration control of a water based drilling fluid comprising:

(a) a polyanionic cellulose or carboxymethyl cellulose in an amount of about 0.25 to about 10 lbs/bbl.; and

(b) a synthetic sulfonate containing polymer in an amount of about 0.25 to about 10 lbs/bbl. that has a molecular weight range of about 300,000 to about 10 million wherein the weight ratio of component (a) to said polymer is about 10:1 to about 1:1 which polymer comprises a vinyl polymer or copolymer in which one of the components is based on a sulfonic acid monomer or where the sulfonate is derived by sulfonating an existing vinyl polymer or copolymer which results in a drilling fluid additive having filtration control qualities substantially equal to those expected for said synthetic sulfonate containing polymer alone.

17. A method for minimizing fluid loss when drilling a well comprising:

(a) adding to a water based drilling fluid a drilling fluid additive comprising

(i) about 0.25 to about 10 lbs. per barrel of a hydroxyalkyl cellulose or an alkyl ether substituted cellulose; and

(ii) about 0.25 to about 10 lbs. per barrel of a synthetic sulfonate-containing vinyl polymer having a molecular weight range of about 300,000 to about 10 million wherein the weight ratio of component (i) to (ii) is about 10:1 to about 1:1;

(b) circulating the drilling fluid from a well while drilling at a temperature up to about 300° F. thereby substantially reducing filter loss from said fluid via said additive as expected from said synthetic sulfonate-containing vinyl polymer alone.

5,008,026

WELL TREATMENT COMPOSITIONS AND METHOD

Tommy R. Gardner; Walter R. Dill; William G. F. Ford, and Karen L. King, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 303,873, Jan. 30, 1989, abandoned. This application Jan. 12, 1990, Ser. No. 464,277
Int. Cl.[5] E21B 43/27
U.S. Cl. 252—8.553 34 Claims

10. An acid and/or water external microemulsion well treatment composition comprising:

(a) a treatment fluid selected from the group consisting of acid, an aqueous acid solution and an aqueous non-acid solution;

(b) an alkyl alcohol having in the range of from 4 to 18 carbon atoms microemulsified into said treatment fluid;

(c) an emulsifying agent present in an amount sufficient to form and maintain a stable microemulsified dispersion of said alkyl alcohol in said treatment fluid;

(d) a mutual solvent selected from the group consisting of glycol ethers and alkyoxylates of glycol ethers; and

(e) a co-solvent selected from the group consisting of polyethylene glycol, primary alcohols and alkyoxylates of alkyl alcohols, each of said components (a)–(e) being different compounds or different mixtures of compounds.

18. A method of treating a subterranean formation to increase the production of hydrocarbons therefrom comprising contacting said formation with an acid and/or water external microemulsion well treatment composition comprising:

(a) a treatment fluid selected from the group consisting of acid, an aqueous acid solution and an aqueous non-acid solution;

(b) an alkyl alcohol having in the range of from 4 to 18 carbon atoms microemulsified into said treatment fluid;

(c) an emulsifying agent present in an amount sufficient to form and maintain a stable microemulsified dispersion of said alkyl alcohol in said treatment fluid;

(d) a mutual solvent selected from the group consisting of glycol ethers and alkyoxylates of glycol ethers; and

(e) a co-solvent selected from the group consisting of polyethylene glycol, primary alcohols and alkyoxylates of alkyl alcohols, each of said components (a)–(e) being different compounds or different mixtures of compounds.

5,008,027

Patent Not Issued For This Number

5,008,028

LIQUID COMPOSITIONS CONTAINING CARBOXYLIC ESTERS

Scott T. Jolley, Mentor, and Arturs Grava, Mayfield Heights, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 284,315, Dec. 14, 1988, abandoned. This application Jul. 19, 1990, Ser. No. 559,525

Int. Cl.[5] C09K *5/04*

U.S. Cl. 252—68 **30 Claims**

1. A liquid composition comprising

(A) a major amount of a fluorine containing hydrocarbon containing one or two carbon atoms, and

(B) a minor amount of a soluble organic lubricant comprising at least one carboxylic ester compound represented by one of the formulae

$$RO(R^1O)_nC(O)R^2 \quad (I)$$

and

$$R^3OC(O)R^2 \quad (II)$$

wherein R is a hydrocarbyl group of at least 2 carbon atoms, provided that when R^2 is H or hydrocarbyl, R contains at least 6 carbon atoms,

R^1 is a hydrocarbylene group,

R^2 is H, hydrocarbyl, $-CF_3$, $-R^4CN$, $-R^4-NO_2$, or $R^5OCH(R^6)-$,

R^3 is a $-R^4CF_3$, $-R^4CN$ or $-R^4NO_2$ group, provided that R^3 is a hydrocarbyl group when R^2 is $-R^4CN$,

n is an integer from 1 to about 50,

R^4 is a hydrocarbylene group,

R^5 is H, a lower hydrocarbyl group or $R^7C(O)-$ where R^7 is a hydrocarbyl group, and

R^6 is H or a lower hydrocarbyl group.

5,008,029

DELAYED ACTION DRAIN CLEANER COMPOSITIONS

Robert Carmello, Dumont, and Richard D. Miller, Union Beach, both of N.J., assignors to Block Drug Company Inc., Jersey City, N.J.

Filed Nov. 20, 1989, Ser. No. 439,190

Int. Cl.[5] C11D *7/06, 17/00*

U.S. Cl. 252—91 **16 Claims**

1. A drain cleaner composition comprising a plurality of granules, said granules comprising an alkali metal hydroxide core having a first coating thereon and a second coating on the first coating, said first coating comprising an ethoxylated surfactant, said second coating comprising a mixture of hydrophobic components having varying hydrophobicity individually selected from the group consisting of an alkali metal salt of a C_8–C_{18} fatty acid, colloidal clay, synthetic clay, metal oxide, alkaline earth metal carbonate, bentonite, feldspar, calcite,

dolomite, diatomaceous earth, talc, pumice, silica and silicate, such that the contact of water with said first coating when the granule is contacted with water is retarded for a finite period of time.

5,008,030

ACIDIC DISINFECTANT ALL-PURPOSE LIQUID CLEANING COMPOSITION

William J. Cook, New York, N.Y.; Karen L. Wisniewski, Bound Brook; Nagaraj S. Dixit, Plainsboro, both of N.J., and Nandakumar S. Rao, Hockessin, Del., assignors to Colgate-Palmolive Co., Piscataway, N.J.

Filed Jan. 17, 1989, Ser. No. 297,807

Int. Cl.[5] C11D *3/48, 7/08*

U.S. Cl. 252—106 **20 Claims**

1. A stable acidic disinfectant all-purpose liquid cleaning composition comprising by weight:

(a) about 0.5–4% of a mixture of acid stable nonionic surfactants, said mixture consisting essentially of a water soluble nonionic surfactant and a water dispersible nonionic surfactant in a weight ratio of water-soluble to water-dispersible surfactant of from about 4:1 to 4:3;

(b) about 3–7% of an organic acid selected from the group consisting of lower aliphatic monocarboxylic acids, lower aliphatic dicarboxylic acids and mixtures thereof;

(c) at least 0.1% of an acid stable antimicrobial compound;

(d) from about 0–2% of an acid-stable cationic or anionic soil releasing agent; and,

(e) the balance water, said liquid cleaning composition having a pH of about 2–4, wherein the water soluble nonionic surfactant is selected from the group consisting of acid-stable nonionic surfactants having a hydrophilic/lipophilic balance (HLB) of at least about 11 and the water dispersible nonionic surfactant is selected from the group consisting of acid stable nonionic surfactants having a hydropholic/lipophilic balance of abut 7–10.

5,008,031

LIQUID DETERGENT

Paul Schulz, Wuppertal, and Karl Schwadtke, Leverkusen, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 15, 1989, Ser. No. 323,637

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1988, 3808695

Int. Cl.[5] C11D *3/44, 3/18, 3/20*

U.S. Cl. 252—168 **16 Claims**

1. An anhydrous liquid detergent consisting of nonionic and anionic surfactants present in a weight ratio of about 1:1 containing a solvent mixture consisting of the combination of low-polarity and mid- to high-polarity organic liquids, said low-polarity organic liquids being selected from an aliphatic and cycloaliphatic hydrocarbon having 8 to 40 carbon atoms, said mid-polarity to high-polarity organic liquids being selected from an ester, ether, ketone and alcohol, wherein the weight ratio of said low-polarity to said mid- to high-polarity organic liquids is from about 5:1 to about 1:2, said solvent mixture being present in a quantity of from about 1 to about 20% by weight, up to about 30% by weight of a particulate

builder material, up to about 0.5% by weight of a cellulose ether, and up to about 25% by weight of a bleaching agent, based on the weight of said liquid detergent.

5,008,032

USE OF PARTIALLY ESTERIFIED COPOLYMERS IN LIQUID DETERGENTS

Paul Diessel, Mutterstadt; Johannes Perner, Neustadt; Walter Denzinger, Speyer; Heinrich Hartmann, Limburgerhof, and Hans-Juergen Raubenheimer, Ketsch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 5, 1989, Ser. No. 417,474

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1988, 3837013

Int. Cl.[5] C11D *3/37*

U.S. Cl. 252—174.24 **13 Claims**

1. A liquid, alkaline detergent formulation, containing as essential constituents:

(1) about 10 to 50% by weight of one or more anionic surfactants, one or more nonionic surfactants or a mixture thereof,

(2) 0.1–20% by weight of a partially esterified copolymer obtainable by copolymerization of

(a) one or more C_4–C_{28}-olefins or a mixture of one or more C_4–C_{28}-olefins with up to 20 mol % of a C_1–C_{28}-alkyl vinyl ether and

(b) an ethylenically unsaturated dicarboxylic anhydride of from 4 to 8 carbon atoms

in a molar ratio of 1:1 to give a copolymer having a K value of from 6 to 100 (determined by the method of H. Fikentscher in tetrahydrofuran at 25° C. and a polymer concentration of 1% by weight) and subsequent partial esterification of the copolymer with a reaction product of

(A) a C_1–C_{30}-alcohol, a C_8–C_{22}-fatty acid, a C_1–C_{12}-alkyl-phenol, a secondary C_2–C_{30}-amine or a mixture thereof with

(B) one or more C_2–C_4-alkylene oxides or tetrahydrofuran in a molar ratio of (A):(B) of from 1:2 to 1:50 and hydrolysis of the anhydride groups of the copolymer to carboxyl groups, the partial esterification of the copolymer being carried on until more than about 9% of the carboxyl groups of the copolymer have been converted, and

(3) water.

5,008,033

INTERNAL MOLD RELEASE COMPOSITIONS

Louis W. Meyer, Livingston, Tex.; J. Alan Vanderhider, Fruthwilen, Switzerland, and Robert Carswell, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 466,826, Feb. 16, 1983, abandoned, and Ser. No. 570,141, Jan. 12, 1984, Pat. No. 4,876,019. This application Jun. 12, 1989, Ser. No. 365,625

Int. Cl.[5] C08K *5/09;* **C08L** *75/12, 75/02*

U.S. Cl. 252—182.13 **54 Claims**

1. An active hydrogen-containing composition comprising

(A) a material having an average of at least about 2 active hydrogen-containing groups per molecule and a weight from about 500 to about 5000 per active hydrogen-containing group, said composition having dissolved therein

(B) from about 0.5 to about 10 parts by weight per 100 parts by weight of component (A) of a metal salt of an organic material containing at least one carboxylic acid group and a saturated or unsaturated aliphatic hydrocarbon chain having at least about 7 carbon atoms wherein said metal is selected from Groups I-B, II-B, III-A, IV-B, V-B, VI-B, VII-B or VIII of the Periodic Table of the Elements, Sn, Pb, Sb or Bi:

said composition containing a sufficient quantity of at least one aliphatic primary and/or secondary amine-containing material such that component (B) is soluble in said composition, wherein

said composition is devoid of an organic material containing at least one carboxylic acid group, phosphorus-containing acid group or boron-containing acid group or mixture of such materials wherein said organic material contains a siloxane chain or contains at least one terminal or pendant saturated or unsaturated aliphatic hydrocarbon chain containing at least about 7 carbon atoms.

5,008,034

TITANIUM ACTIVATED HAFNIA AND/OR ZIRCONIA HOST PHOSPHOR CONTAINING NEODYMIUM

Philip S. Bryan, Webster; Patrick M. Lambert, Rochester; Christine M. Towers, Rochester, and Gregory S. Jarrold, Henrietta, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 437,464, Nov. 16, 1989, which is a continuation-in-part of Ser. No. 305,222, Feb. 3, 1989. This application Jun. 29, 1990, Ser. No. 546,215

Int. Cl.[5] C09K *11/67*

U.S. Cl. 252—301.40 F **13 Claims**

1. A phosphor capable of absorbing X-radiation and emitting longer wavelength radiation comprised of monoclinic crystals of a titanium activated hafnium dioxide and/or zirconium dioxide host consisting essentially of oxygen and combined elements satisfying the relationship

$$DTi_xM_yNd_w$$

wherein

D represents at least one or zirconium and hafnium ions;

M represents at least one alkali metal;

w is in the range of from 5×10^{-8} to 5×10^{-4};

x is in the range of from 3×10^{-4} to 1.0; and

y is up to 1;

the phosphor exhibiting reduced afterglow when excited by X-radiation as compared to the phosphor as defined above absent neodymium.

2. A phosphor capable of absorbing X-radiation and emitting longer wavelength radiation comprised of monoclinic crystals of a titanium activated hafnium dioxide and/or zirconium dioxide host consisting essentially of oxygen and combined elements satisfying the relationship

$$DTi_xM_yNd_wL_v$$

wherein

D represents at least one of zirconium and hafnium ions;

L represents at least one of samarium and europium;

M represents at least one alkali metal;

v is up to 5×10^{-4};

w is in the range of from 5×10^{-8} to 5×10^{-4};

x is in the range of from 3×10^{-4} to 1.0; and

y is up to 1;

the phosphor exhibiting (a) reduced afterglow when excited by X-radiation as compared to the phosphor as defined above absent neodumium, samarium and europium and (b) a higher prompt emission intensity when sararium and/or europium are present as compared to the phosphor defined above absent samarium and europium.

5,008,035

FLUIDIZATION OF HEAVY SLURRIES

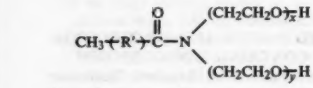
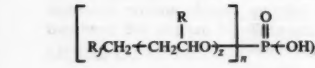
Henry T. Broom, Richmond, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Division of Ser. No. 132,836, Dec. 14, 1987, Pat. No. 4,949,743. This application May 11, 1990, Ser. No. 521,954

Int. Cl.[5] B01J *13/00;* **B01F** *17/14, 17/42*

U.S. Cl. 252—312 **2 Claims**

1. A composition useful for fluidizing oily heavy slurries, which comprises:

Ingredient	Wt. Percent
(a) water	15–85
(b) an ethoxylated nonyl phenol-formaldehyde resin having a molecular weight ranging between about 1000–25,000	40–5
(c) an alkanolamide condensate represented by:  wherein R' is a hydrocarbonaceous bridging group having from 1–20 carbon atoms and chosen from linear or branched alkylene, alkaryl, aralkyl, cyclic and mixtures thereof; x and y are, individually, from 0–8, provided that the sum of x + y is at least 1;	20–2.5
(d) an alkoxylated fatty alcohol phosphate represented by:  wherein: R_f is a fatty alkyl group having from 6–30 carbons and being linear or branched; R is H, CH_3, or mixture thereof; z is between 1–12; n is from 1–3; m is 3 − n; and the sum of n + m is 3.	20–2.5
(e) A hydrocarbon solvent chosen from the group consisting of naphthas, aromatic naphthas, heavy aromatic naphthas, alkylated aromatics, light aromatic petroleum distillates, turpentines, dipentene rich turpentine, and mixtures thereof.	75–5

5,008,036

COLLOIDAL SOLS OF ANTIMONY PENTOXIDE IN AN AQUEOUS MEDIUM AND THEIR PREPARATION

Charles E. Crompton, Arlington Heights, Ill.; Abdulla M. Z. Kazi, Euclid, and Inderjit S. Soni, Bedford Heights, both of Ohio, assignors to Laurel Industries, Inc., Cleveland, Ohio

Filed Aug. 18, 1975, Ser. No. 605,607

The portion of the term of this patent subsequent to Sep. 7, 2009, has been disclaimed.

Int. Cl.[5] B01J *13/00;* **C01G** *30/00;* **C09K** *21/02*

U.S. Cl. 252—313.1 **35 Claims**

1. A process for making a colloidal dispersion of hydrous antimony pentoxide particles comprising introducing a particulate antimony component selected from the group consisting of antimony metal and antimony trioxide into an essentially aqueous medium which contains no stabilizers and contacting said antimony component with hydrogen peroxide in the aqueous medium, at a temperature of from about 0° C. to about the decomposition temperature of the reaction mixture for a length of time sufficient to convert at least a portion of the antimony component to colloidal particles of hydrous antimony pentoxide.

32. A stable aqueous antimony pentoxide sol comprising an amount of antimony pentoxide which, when expressed as antimony metal, is from about 0.01% to about 40% by weight, an amine in a molar ratio of from 0.01:1 to about 4:1, based on antimony, and the remainder water, said sol prepared by admixing antimony tri-oxide, an amine and water and to said mixture, adding H_2O_2 with refluxing, then cooling the mixture, thus forming the stable sol said amine being diethanolamine.

5,008,037

EMULSIFIER FOR WATER-IN-OIL EMULSIONS

John D. Weete, Opelika, Ala., and George L. Griffith, Bethlehem, Pa., assignors to Emulsion Technology, Inc., Parrish, Ala.

Division of Ser. No. 177,956, Apr. 4, 1988, Pat. No. 4,943,389. This application Jun. 26, 1990, Ser. No. 543,531

Int. Cl.[5] B01F *17/14;* **B01J** *13/00;* **A23J** *7/00;* **C07F** *9/10*

U.S. Cl. 252—314 **9 Claims**

1. A process for preparing a water-in-oil emulsion, which comprises the steps of

(i) heating a component consisting essentially of lecithin at a temperature in the range of from about 100° C. to about 250° C. for a period of time ranging from about 15 to about 480 minutes,

(ii) mixing the product of (i) with an oil, and

(iii) adding to the product of (ii) an aqueous phase with agitation to thereby yield a water-in-oil emulsion.

5,008,038

SOLUBILIZATION OF LACTAM AND CHLORHEXIDINE IN WATER

John J. Merianos, Middletown, and Robert B. Login, Oakland, both of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

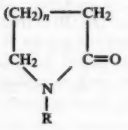
Filed Oct. 10, 1989, Ser. No. 419,176

Int. Cl.[5] B01F *3/20;* **A61K** *31/155*

U.S. Cl. 252—363.5 **10 Claims**

1. A composition of matter comprising an aqueous solution containing between about 1 and about 25 wt. % based on water of a complex of:

(a) an N-hydrocarbon substituted lactam defined by the formula



wherein n is an integer having a value of from 1 to 3 and R is a linear alkyl radical containing from 10 to 14 carbon atoms; and

(b) between about 0.08 and about 0.25 wt. % chlorhexidine based on lactam.

5. Method of making the composition of claim 1 which comprises:

(a) dissolving chlorhexidine free base in lactam in an amount between about 3 and about 15 wt. % chlorhexidine free base based on lactam; and

(b) then mixing the solution of chlorhexidine free base in lactam with water to form an aqueous solution containing between about 1 and about 25 wt. % of the solution of lactam and chlorhexidine.

5,008,039

LOW FOAMING RUST INHIBITING COMPOSITION

Fred E. Woodward, Palm Beach, and Alice P. Hudson, Lake Park, both of Fla., assignors to Westvaco Corporation, New York, N.Y.

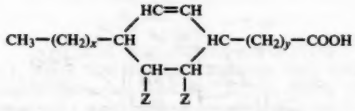
Continuation of Ser. No. 169,214, Mar. 15, 1988, Pat. No. 4,956,106. This application Jun. 29, 1990, Ser. No. 545,819

Int. Cl.[5] C23F *11/10*

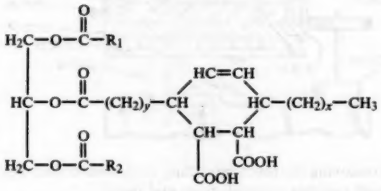
U.S. Cl. 252—392 **6 Claims**

1. An improved method of inhibiting corrosion of metals exposed to aqueous media comprising contacting said metals

with a water-soluble corrosion inhibiting composition comprising a corrosion inhibiting amount of a water-soluble dicarboxylic acid of the formula:



wherein Z is COOH or H, and one of each is present, and x and y are from 3 to 9 with x+y=12, wherein the improvement comprises reducing the foaming tendencies of said composition by the addition thereto of (1) a foam inhibiting amount of a vegetable oil adduct of the formula:



wherein x and y are integers from 3 to 9, x and y together equal 12 and R_1 and R_2 are saturated or unsaturated hydrocarbon radicals and (2) a base to adjust the pH of the composition to from about 6.5 to about 10.5.

5,008,040

PROCESS FOR PREPARATION OF POLYACETYLENE FILM

Jun Tsukamoto, Otsu, and Akio Takahashi, Kusatsu, both of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Sep. 29, 1988, Ser. No. 250,735

Claims priority, application Japan, Feb. 9, 1988, 63-26537; Apr. 19, 1988, 63-94504

Int. Cl.[5] H01B *1/00, 1/06*

U.S. Cl. 252—500 **8 Claims**

1. A process for the preparation of a polyacetylene film, which comprises (a) heating a Ziegler-Natta catalyst comprising an alkylaluminum compound and a titanium compound at a temperature not lower than 150° C. but below the decomposition temperature of the catalyst in an organic solvent and then, cooling the catalyst-organic solvent mixture said organic solvent having a boiling point of from 150° C. to 300° C. and being selected from the group consisting of saturated hydrocarbons, aromatic hydrocarbons and organic silicon compounds, (b) removing coarse catalyst particles having a diameter larger than 1 μm from the catalyst-organic solvent mixture to form a catalyst dispersion for polymerization, (c) contacting acetylene with the catalyst dispersion at a temperature of from −78° C. to 50° C. to effect polymerization of acetylene, and (d) drawing the formed polyacetylene film.

5,008,041

PREPARATION OF CONDUCTIVE POLYANILINE HAVING CONTROLLED MOLECULAR WEIGHT

Randy E. Cameron, Pacific Palisades, and Sandra K. Clement, Canyon Country, both of Calif., assignors to Lockheed Corporation, Calabasas, Calif.

Filed Jan. 30, 1990, Ser. No. 471,979

Int. Cl.[5] H01B *1/06*

U.S. Cl. 252—500 **14 Claims**

1. A process for producing conductive polyaniline which comprises

providing a mixture of aniline and dianiline in a molar proportion of aniline to dianiline in said mixture in the range of about 1 to about 100,

reacting said mixture in the presence of an oxidant and a protonic acid to polymerize said mixture of aniline and dianiline, and

forming conductive polyaniline.

5,008,042

FLUORORESIN-CONTAINING COATING COMPOSITION AND USE THEREOF

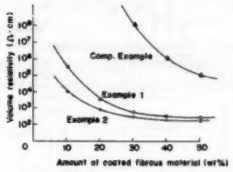
Norimasa Honda, Ibaraki, and Masahiro Sano, Minoo, both of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Filed Oct. 27, 1987, Ser. No. 113,122

Claims priority, application Japan, Oct. 28, 1986, 61-257181

Int. Cl.[5] H01B *1/20;* **C08K** *9/02*

U.S. Cl. 252—518 **9 Claims**



1. A fluororesin-containing coating composition comprising a fluororesin, a fibrous material selected from the group consisting of fibrous potassium titanate, fibrous silicon nitride, fibrous α-alumina and fibrous boron carbide coated by an electrically conductive oxide and having a diameter of 0.01 to 10 micrometers and a length of 1 to 100 micrometers, an acrylic resin selected from the group consisting of polymethyl methacrylate, polymethyl acrylate and polyethyl acrylate and a liquid medium wherein the weight ration of the fluororesin to the fibrous material is from 95:5 to 50:50, and the weight ratio of the fluororesin to the acrylic resin is from 100:0 to 85:15.

5,008,043

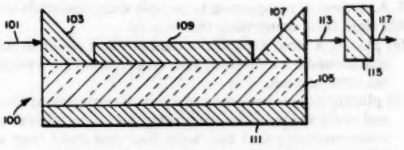
OPTICAL ARTICLE EXHIBITING A HIGH LEVEL OF SECOND ORDER POLARIZATION SUSCEPTIBILITY

Douglas R. Robello, Webster; Abraham Ulman, Brighton; Edward J. Urankar, Rochester, and Craig S. Willand, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 16, 1990, Ser. No. 494,376

Int. Cl.[5] F21V *9/00;* **G02B** *6/00, 6/10*

U.S. Cl. 252—582 **20 Claims**



1. An optical article containing, for the transmission of electromagnetic radiation, a medium exhibiting a second order polarization susceptibility greater than 10^{-9} electrostatic units comprised of polar aligned noncentrosymmetric molecular dipoles having a hydrophobic electron donor moiety linked through a conjugated π bonding system to a sulfonyl electron acceptor moiety to permit oscillation of the molecular dipole between a lower polarity ground state and a higher polarity excited state,

characterized in that the sulfonyl electron acceptor moiety includes at least two halogen substituents of its α carbon atom.

5,008,044

PROCESS FOR DECONTAMINATING RADIOACTIVELY CONTAMINATED METAL OR CEMENT-CONTAINING MATERIALS

Jozef Hanulik, Zurich, Switzerland, assignor to Recytec SA, Switzerland

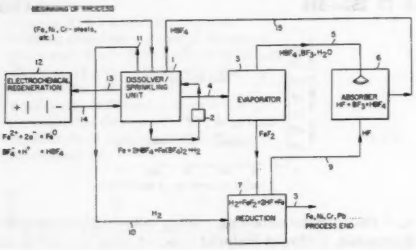
Continuation-in-part of Ser. No. 19,799, filed as PCT CH 86/00069 on May 27, 1986, Pat. No. 4,828,759. This application May 9, 1989, Ser. No 349,586

Claims priority, application Switzerland, May 28, 1985, 02238/85; May 28, 1985, 02239/85; Jun. 3, 1985, 02328/85

The portion of the term of this patent subsequent to May 9, 2006, has been disclaimed.

Int. Cl.[5] G21F *9/16, 9/08;* C09K *13/08;* B08B *9/00*

U.S. Cl. 252—628 18 Claims



1. A process for decontaminating radioactively contaminated porous materials using a decontamination agent selected from the group consisting of fluoroboric acid; hexafluorosilicate acid; water soluble salts of fluoroboric acid; and mixtures thereof in aqueous solution, said decontamination agent having a concentration of about 0.05 to about 50 mol/liter in said solution, said process comprising contacting said radioactively contaminated porous materials to be decontaminated with said decontamination agent; dissolving surface layers of said radioactively contaminated porous materials by said contacting with said decontamination agent; and separating said decontamination agent from radioactive contaminants and impurities by distillation.

5,008,045

METHOD AND APPARATUS FOR CENTRIFUGALLY CASTING HAZARDOUS WASTE

Frank Manchak, Jr.; Frank E. Manchak, II; Michael E. Manchak, and Peter J. Manchak, all of Goleta, Calif., assignors to Alternative Technologies for Waste, Inc., Goleta, Calif.

Continuation-in-part of Ser. No. 328,020, Mar. 23, 1989. This application Jul. 21, 1989, Ser. No. 384,087

Int. Cl.[5] G21F *9/12*

U.S. Cl. 252—633 10 Claims

1. A method of compacting hazardous waste materials into a stable rigid form comprising the steps of:

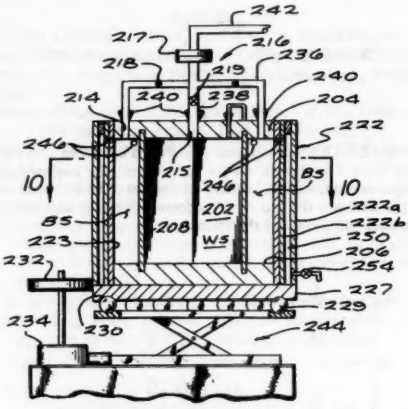
(a) placing a mold liner into a casting mold which is rotatable around a longitudinal axis, said liner having a polygonal cross section;

(b) placing a cage comprised of a pair of contaminant barrier end walls spaced from each other and a peripheral wall interconnecting said end walls into said mold liner and affixing said cage in position therein, said cage having a polygonal cross section, said mold liner and said cage defining a casting space therebetween for casting a peripheral contaminant barrier wall of polygonal cross section and substantially constant thickness;

(c) rotating said mold, mold liner and cage about said longitudinal axis;

(d) injecting a castable contaminant barrier material into said polygonal wall casting space to centrifugally cast said peripheral contaminant barrier wall of a desired wall thickness;

(e) injecting a castable hazardous waste material into the interior of said cage and centrifugally casting same therein; and



(f) removing the resulting casting comprised of said cage and said castable materials from said mold.

5,008,046

PROCESS FOR THE CONTINUOUS ESTERIFICATION OF FATTY ACIDS

Norbert Bremus, Langenfeld; Bernhard Gutsche, Hilden; Lutz Jeromin, Hilden; Eberhard Peukert, Hilden, and Bernard Schleper, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 21, 1989, Ser. No. 326,592

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1988, 3809417

Int. Cl.[5] C11C *3/00;* C07C *67/08*

U.S. Cl. 260—410.6 14 Claims

1. A continuous process for esterification of C_2–C_{24} fatty acid with C_1–C_5 monohydric alkanol or C_2–C_3 dihydric alkanol in a liquid phase in the presence of a catalyst which . comprises:

(a) introducing heated fatty acid and catalyst onto the top plate of a multiple plate reaction column, operated at a top pressure of from about 200 to about 900 hPa, the top of the reaction column is in communication with a rectifying column;

(b) introducing the alkanol, in a vapor phase, below the lowest plate of the reaction column;

(c) reacting the fatty acid and the alkanol in the liquid phase;

(d) removing a water-alkanol vapor mixture through the rectifying column; and

(e) removing an esterified fatty acid mixture from the column below the lowest plate.

5,008,047

PROCEDURE FOR THE REFINING OF OILS

Laurent Martens, Ranst, Belgium, assignor to Schelde-Delta, Antwerp, Belgium

Filed Jun. 26, 1989, Ser. No. 371,272

Claims priority, application Belgium, Jun. 29, 1988, 8800749

Int. Cl.[5] C11B *3/04*

U.S. Cl. 260—424 18 Claims

1. A process for refining an oil containing unhydratable phospholipids, said process comprising the steps of:

forcing a stream of oil through an immobilized solid Lewis acid catalyst in the presence of water to catalytically

convert the unhydratable phospholipids into hydratable phospholipids; then

hydrating the hydratable phospholipids; and then

separating the hydrated phospholipids from the oil.

5,008,048

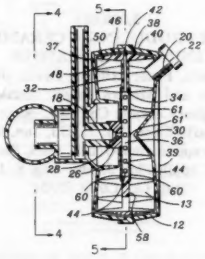
POSITION INSENSITIVE ASPIRATOR

Steven L. Ryder, 1334 Woodcrest, Fullerton, Calif. 92633

Continuation-in-part of Ser. No. 279,657, Dec. 5, 1988, abandoned, and a continuation-in-part of Ser. No. 415,914, Oct. 2, 1989. This application Mar. 15, 1990, Ser. No. 493,888

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—78.2 **18 Claims**



1. In a device for aspirating a liquid comprising a hollow housing having end walls and side walls and defining a reservoir for a liquid to be aspirated, said housing having inlet means for a carrier gas and a pressurized gas, and an outlet for said carrier gas and aspirated fluid, nozzle means within said housing communicating with said inlet means for said pressurized gas and communicating with said reservoir for producing reduced pressure within said housing and for aspirating said liquid, the improvement comprising:

an entrainment member disposed in said housing and capable of conveying liquid in said reservoir to said nozzle means for aspiration irrespective of the position and orientation of said device, said entrainment member defining a peripheral surface spaced from said housing side walls and disposed parallel thereto to provide a flow path for fluid communication between said peripheral surface and said reservoir and means providing fluid communication between said peripheral surface and said nozzle means,

whereby liquid in said reservoir is entrained in said flow path and is drawn to said nozzle outlet for aspiration due to the reduced pressure in said housing caused by a stream of gas exiting said nozzle irrespective of the position and orientation of said device.

5,008,049

METHOD FOR SEALING AN ELECTRONIC DEVICE CONTAINING A FLUID MATERIAL

James W. Rose, Delmar, and Theresa A. Sitnik, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 21, 1989, Ser. No. 410,398

Int. Cl.[5] B29C *39/38, 39/10*

U.S. Cl. 264—4 **24 Claims**

1. A method for sealing a fluid between spaced apart first and second members of a device, comprising the steps of:

forming a seal of sealant material across a space between the first and second members and essentially completely around the periphery of the device;

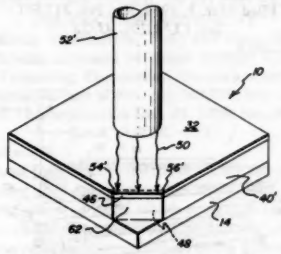
forming an aperture through the seal to provide access to an interior of the device;

introducing the fluid into the device interior through the aperture;

filling the aperture with a plug of thermoplastic material;

selectively heat treating substantially only the plug to cause at least an exterior portion of the plug to soften and flow; and

terminating the heat treatment after a duration sufficiently



short to avoid contamination of said fluid, to cause the plug to resolidify and bind to a boundary of the aperture and complete the peripheral seal to completely enclose the fluid.

5,008,050

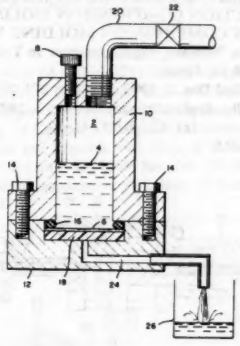
EXTRUSION TECHNIQUE FOR PRODUCING UNILAMELLAR VESICLES

Pieter R. Cullis; Michael J. Hope, and Marcel B. Bally, all of Vancouver, Canada, assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation of Ser. No. 788,017, Oct. 16, 1965, abandoned, which is a division of Ser. No. 622,690, Jun. 20, 1984, abandoned. This application Feb. 13, 1989, Ser. No. 310,495

Int. Cl.[5] A61K *9/133, 37/22*

U.S. Cl. 264—4.3 **29 Claims**



1. A method for reducing the lamellarity of a population of liposomes comprising repeatedly passing the liposomes under pressure through a filter which has a pore size (equal to or less than) no larger than about 100 nm.

10. A method for preparing a population of substantially unilamellar liposomes comprising the steps of:

(a) preparing multilamellar liposomes; and

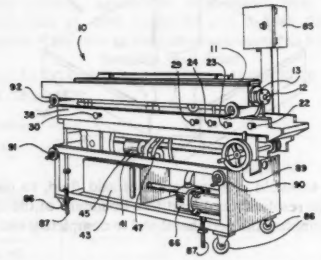
(b) repeatedly passing the liposomes under pressure through a filter which has a pore size no larger than about 100 nm.

5,008,051

VACUUM SIZING TANK WITH ELECTRONICALLY CONTROLLED VACUUM PRESSURE

Robert T. DeCoursey, 199 Euclid, Bloomingdale, Ill. 60108, and Mikel J. Messick, 784 Red Oak Dr., Bartlett, Ill. 60103

Filed Mar. 1, 1989, Ser. No. 317,681
Int. Cl.[5] B29C *43/22*
U.S. Cl. 264—40.3 16 Claims



1. In a vacuum sizing tank substantially closed to the atmosphere including:

(a) an enclosed trough capable of holding water and a vacuum, said trough having a first opening for the ingress of a molten plastic extrudate and a second opening for the egress of a cooled plastic extrudate; and

(b) vacuum means for applying a vacuum to said trough,

the improvement (1) wherein said vacuum means applies any one of a plurality of different vacuums to said trough and (2) comprising:

(A) detector means, coupled to said trough, for determining the pressure within said trough;

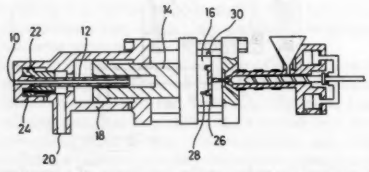
(B) control means, coupled to said detector means and said vacuum means, for (1), when said detector means determines that the pressure has fallen below a predetermined value, causing said vacuum means to decrease the vacuum applied to said trough and (2), when said detector means determines that the pressure in said trough has risen above said predetermined value, causing said vacuum means to increase the vacuum applied to said trough.

5,008,052

MOLD CLAMPING PRESSURE CONTROL METHOD FOR INJECTION COMPRESSION MOLDING AND INJECTION COMPRESSION MOLDING MACHINE

Susumu Harada, Numazu, Japan, assignor to Toshiba Machine Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1988, Ser. No. 279,197
Claims priority, application Japan, Dec. 3, 1987, 62-304439
Int. Cl.[5] B29C *45/80*
U.S. Cl. 264—40.5 2 Claims



1. A mold clamping pressure control method for injection compression molding of resin through adjustments of oil pressure in a mold clamping cylinder by means of a mold clamping pressure control valve, comprising:

detecting a resin temperature in a cavity in a mold by a resin temperature sensor;

converting detected values thereof into electric signals by a converter;

comparing in turn said electric signals with a series of preset pressure changeover temperature setting values to output one pressure changeover signal whenever said detected values correspond to said setting values; and

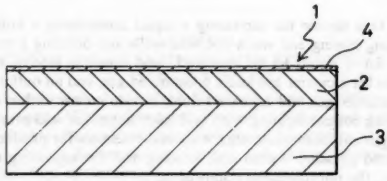
converting said pressure changeover signal corresponding to any of a series of pressure setting values which are predetermined according to the resin temperatures, into a valve opening-shutting amount before outputting valve opening-shutting directing signals, thereby controlling an opening-shutting amount of said mold clamping pressure control valve, whereby a plurality of different mold clamping pressures are successively applied in response to the detection of a plurality of successively different resin temperatures.

5,008,053

PROCESS FOR PRODUCING A CERAMIC PRODUCT USING SLUDGE ASHES

Ryusuke Hashimoto, Fuso; Mitsuru Iwata; Junichi Sugihara, both of Mitake, and Minoru Iwase, Mitake, all of Japan, assignors to Fujimi Ceramic Co., Ltd., Nagoya, Japan

Continuation-in-part of Ser. No. 71,273, Jun. 9, 1987, Pat. No. 4,874,153. This application Oct. 6, 1989, Ser. No. 418,141
Claims priority, application Japan, Aug. 8, 1989, 1-205104
Int. Cl.[5] C04B *35/64*
U.S. Cl. 264—60 2 Claims



1. A process for producing a ceramic product using sludge ashes, comprising the steps of

(a) mixing at least (i) ashes obtained by burning a sludge which as been obtained by the treatment of sewage and (ii) a plastic ceramic raw material to prepare a first body,

(b) mixing at least a plastic ceramic raw material and a fusible material to prepare a second body,

(c) supplying the first and second bodies into a matrix of a molding machine such that the first and second bodies form a lower, major layer and an upper, surface layer which covers the lower layer, respectively,

(d) molding the first and second bodies as one body into an object with a desired shape, and

(e) firing a molding obtained in the step (d), thereby producing a two-layer ceramic product whereby the effects of different sewage treatments on the quality of the resultant product is largely mitigated.

5,008,054

CERAMIC INJECTION MOLDED BODY AND METHOD OF INJECTION MOLDING THE SAME

Shigeki Kato, Nagoya, and Katsuhiro Inoue, Aichi, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 22, 1989, Ser. No. 455,229
Claims priority, application Japan, Dec. 24, 1988, 63-326932
Int. Cl.[5] C04B *35/64*
U.S. Cl. 264—63 2 Claims

1. A method of producing a sintered ceramic body, comprising the steps of:

granulating a ceramic powder to form granulated particles;

kneading the granulated particles with the addition of at least one organic binder;

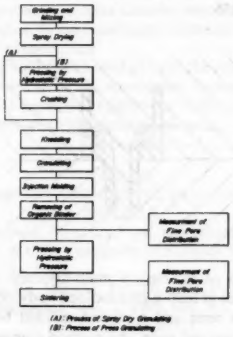
injection molding the kneaded particles to form a molded body;

heating the molded body to burnout said organic binder;

hydrostatically pressing the molded body; and

sintering the hydrostatically pressed, molded body;

wherein the granulating and kneading steps are performed under conditions selected to prevent crushing of the granulated particles during kneading, such that at least 30% of



the total volume of pores in the molded body after the heating step have a diameter of at least 0.1 μm, and wherein the hydrostatic pressing step is performed under conditions selected to crush the granulated particles contained in the molded body, such that at least 50% of the total volume of pores in the hydrostatically pressed, molded body after the hydrostatic pressing step have a diameter of at most 0.1 μm.

5,008,055

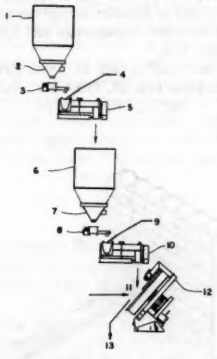
PROCESS FOR PELLETIZING HIGHLY REACTIVE POWDERS

Carl A. Holley, 14315 Tall Oaks, Riverview, Mich. 48192

Filed Sep. 4, 1990, Ser. No. 577,281

Int. Cl.[5] C04B *2/02, 11/28;* **B29B** *9/08*

U.S. Cl. 264—117 **8 Claims**



1. The method of forming strong and durable pellets from dust collected from stack gases, the dust including CaSO2, CaSO4 and unreacted CaO, comprising blending a portion of water required for a total hydration with a first mixer, storing the moistened dust in a conditioning container wherein some compounds in the moistened dust are chemically reacted with said water to form hydroxides, adding more water to the reacted dust, subjecting the wetted dust to an intense second mixer, and thereafter pelletizing the wetted dust in a pelletizer.

5,008,056

REDUCTION IN DIE DROOL IN FILLED RESINS AND PRODUCT IMPROVEMENT

Stuart J. Kurtz, Martinsville, N.J., and Steve R. Szaniszlo, Laval, Canada, assignors to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 249,778, Sep. 26, 1988, abandoned. This application Dec. 21, 1989, Ser. No. 454,458

Int. Cl.[5] B29C *47/12*

U.S. Cl. 264—130 **3 Claims**

1. A process for reducing die drool during the die extrusion of highly filled polyolefinic resins for production of jacketing insulators for wire and cable which comprises anchoring into the surface of the die submicron particles of a fluorinated hydrocarbon polymer said anchoring being effected by creating pores in the surface of the die in contact with the polymeric resins and thereafter infusing said pores with said submicron particles of fluorinated hydrocarbon polymer.

5,008,057

METHOD OF PRODUCING A STRUCTURE, MORE PARTICULARLY A WOODEN STRUCTURE, IN THE SURFACE OF A HARDENED FIBREBOARD

Harald Risius, Aurich, and Wilhelm Oldemeyer, Meppen, both of Fed. Rep. of Germany, assignors to Glunz Aktiengesellschaft, Hamm, Fed. Rep. of Germany

Filed Nov. 29, 1989, Ser. No. 443,654

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1988, 3840292

Int. Cl.[5] B29C *59/02*

U.S. Cl. 264—134 **7 Claims**

1. A method for producing a wooden structure in an initially uncoated surface of a hardened fibreboard, comprising the steps of: applying an initial coating of a resin-water mix to the uncoated surface of the fibreboard on one or both sides to soften and penetrate into the surface of the fibreboard; molding the wooden structure into the surface of the softened fibreboard by pressing said fibreboard with a short cycle press, under the action of pressure and heat, and using a structured pressure-plate to evaporate the water-part of the resin-water mix and to cure the resin part, whereby the structure of the pressure-plate is molded into the surface of the fibreboard.

5,008,058

METHOD FOR MANUFACTURING AN OTOPLASTIC OR AN EAR ADAPTOR MEMBER

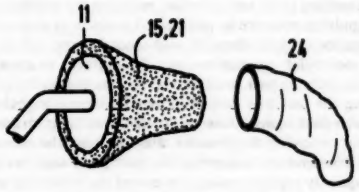
Hans Henneberger, Effeltrich, and Rainer Basel, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 19, 1989, Ser. No. 299,069

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1988, 3801392

Int. Cl.[5] B29C *41/22*

U.S. Cl. 264—134 **14 Claims**



1. A method for manufacturing a customized ear adaptor

member including an otoplastic and adaptor member, said adaptor member having an elastic-shaped part of a desired shaped placed on a carrier part, said method comprising the steps of providing an open-celled porous deformable part on a carrier part, said deformable part being slightly larger than an auditory canal of an ear of a hearing impaired person, at least partially saturating the deformable part with a liquid hardenable material so that said material is retained in said deformable part, then inserting the at least partially saturated deformable part and the carrier part into the auditory canal of the ear of the hearing impaired person and allowing the at least partially saturated deformable part to confirm to the canal as the hardenable material hardens to permanently conform the deformable part to the shape of the auditory canal of the ear of the person to form a permanently shaped part of the desired shape and then removing the formed, shaped part from the ear.

5,008,059

METHOD FOR MANUFACTURING A PLASTIC PART HAVING A SHAPE MEMORY

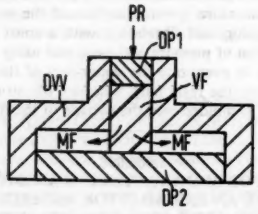
Helmut Kaeufer, Mettmann; Christian Kipfelsberger, Hepberg, and Karl-Heinz Leyrer, Bobfingen, all of Fed. Rep. of Germany, assignors to R X S Schrumpftechnik-Garnituren GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 38,236, Apr. 14, 1987, abandoned. This application Oct. 23, 1989, Ser. No. 425,437

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1986, 3612518

Int. Cl.[5] B29C *43/04, 61/06*

U.S. Cl. 264—230 **25 Claims**



1. A method for the manufacture of plastic parts of a thermal plastic synthetic material having a crystallite melting point and a softening point, said parts having a shape memory and being restored by the application of energy to an original shape from a second shape, the method comprising the steps of providing a preform of the original shape for the part in an apparatus having a cavity of the second shape of the part, said preform being free of cross-linked material, heating the preform to a first elevated temperature below the temperature of the crystallite melting point and softening point for the synthetic material, applying pressure to said heated preform in said cavity to change the original shape to said second shape and to introduce molecular orientations into the preform to change the preform into the part, maintaining the pressure on the part and cooling the part to a second elevated temperature below the first elevated temperature to fix the molecular orientations therein, removing the pressure after reaching the second elevated temperature, removing the part from said cavity and subsequently applying energy to cancel the molecular orientations and create restoring forces to return the part back to the original shape.

5,008,060

METHOD OF MOLDING A MULTI-INJECTION MOLDED BODY

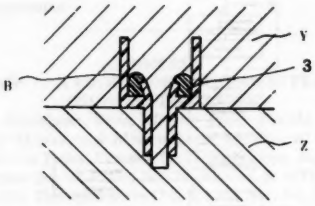
Toshiyuki Kanai, and Nobuo Shinnoh, both of Sakaki, Japan, assignors to Nissei Jushi Kogyo Kabushiki Kaisha, Nagano, Japan

Division of Ser. No. 347,908, May 5, 1989, abandoned. This application Jul. 17, 1989, Ser. No. 380,297

Claims priority, application Japan, Nov. 5, 1988, 63-114453

Int. Cl.[5] B29C *65/56*

U.S. Cl. 264—255 **11 Claims**



1. A method of molding a multi-injection molded body, which comprises at least a first molded body consisting essentially of a first resin and a second molded body consisting essentially of a second resin, the method comprising:

injection molding the first body so that on a surface thereof which is to be joined to the second body, there exists a concave section which opens on said surface;

reshaping the first body and thereby projecting at least a portion of a sidewall of said concave section inward to form an undercut section in the concave section;

and injecting said second resin into the concave section having said undercut section therein and into a cavity of a mold, in order to mold the second body tightly fixed to the first body by the undercut section.

5,008,061

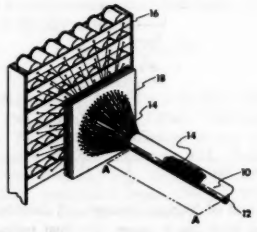
PROCESS FOR THE MANUFACTURE OF SEAMLESS METAL-CLAD FIBER-REINFORCED ORGANIC MATRIX COMPOSITE STRUCTURES

Raymond M. Bluck, San Jose, Calif.; Harold G. Bush, Yorktown, Va., and Robert R. Johnson, Saratoga, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 921,572, Oct. 21, 1986, Pat. No. 4,923,761. This application Feb. 28, 1990, Ser. No. 486,668

Int. Cl.[5] B29C *45/14*

U.S. Cl. 264—257 **3 Claims**



1. A process for producing metal seamless clad composite structures comprising:

providing a hollow, metallic inner member;

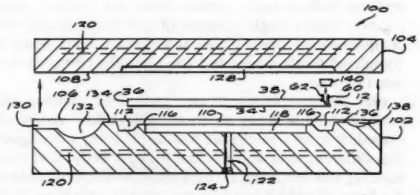
providing an outer sleeve to surround the inner member and define an inner space therebetween;

attaching to the distal end of the outside diameter of said inner member a plurality of continuous reinforcing fibers;
introducing the inner member, distal end first, into one end of the outer sleeve;
sliding said inner member, distal end first, into the outer sleeve until the inner member is completely enveloped by the outer sleeve;
injecting a liquid matrix material into the space containing the reinforcing fibers between the inner member and the outer sleeve;
flowing a pressurized heat transfer medium through said inner member, to cure said matrix material and to provide structural support; and
reducing the wall thicknesses of both the inner member and the outer sleeve to the appropriate dimensions to adjust the thermal expansion coefficient of the metal-clad composite structure to the desired value.

5,008,062
METHOD OF FABRICATING PHOTOVOLTAIC MODULE

A. Jerome Anderson, Newbury Park, and Norman L. Beze, Simi Valley, both of Calif., assignors to Siemens Solar Industries, L.P., Camarillo, Calif.

Division of Ser. No. 145,931, Jan. 20, 1988, Pat. No. 4,830,038. This application Mar. 2, 1989, Ser. No. 318,785
Int. Cl.[5] B29C 45/14
U.S. Cl. 264—272.15 **7 Claims**



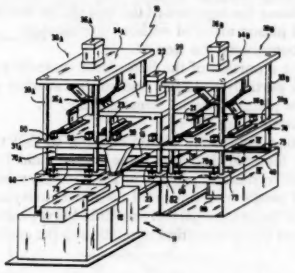
1. A method for forming an elastomeric casing on a predetermined portion of a thin film photovoltaic panel having front and back sides and edges forming a perimeter, and at least one thin film photovoltaic cell capable of converting radiation incident the front side of the panel to electrical energy, the method comprising the steps of:
placing the thin film photovoltaic panel in a mold having interior walls which cooperate with said predetermined portion of the panel to define a cavity encompassing the perimeter and the back side of the panel; and
introducing a flowable reaction injection molding material into the cavity and curing said material to form a unitary elastomeric casing which encapsulates the entire back side and perimeter edges of the panel and forms a seal against a portion of the front side of the panel bordering the perimeter.

5,008,063
METHOD FOR PRESS MOLDING PLASTICS ARTICLES, IN PARTICULAR THERMOPLASTIC, THERMOSETTING AND POLYURETHANE PLYMERIC ARTICLES

Giorgio Margiaria, Moncalieri, and Giuseppe Brizio, Fossano, both of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Division of Ser. No. 118,903, Nov. 9, 1987, Pat. No. 4,861,258. This application Aug. 28, 1989, Ser. No. 405,791
Claims priority, application Italy, Nov. 20, 1986, 67862 A/86
Int. Cl.[5] B29C 45/04
U.S. Cl. 264—297.2 **1 Claim**

1. A method for molding plastic articles comprising:
arranging a first mold at a central molding station and a second mold at one of two cooling and extraction stations located adjacent said molding station on opposite sides thereof,
simultaneously molding an article in said first mold at the central station while applying a pressure by a first pressure applying means and cooling and extracting a molded article from said second mold at said one of two cooling and extraction stations,
positioning second pressure applying means to define an elongated transfer path for said first and second molds,
applying a closure pressure to the molds by means of said second pressure applying means,

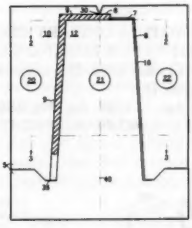


moving the molds relative to said second pressure applying means to maintain said closure pressure to bring the second mold into the central molding station and the first mold into another of the two cooling and extraction stations, and
alternately repeating the above operations by shifting the respective molds simultaneously back and forth between the molding stations and the respective cooling and extraction stations.

5,008,064
INJECTION-MOLDING DIMENSION-CONTROL AND CLAMP-REDUCTION

Jens O. Sorensen, Rancho Santa Fe, Calif., assignor to Primtec, Rancho Santa Fe, Calif.

Filed Jun. 5, 1989, Ser. No. 361,275
Int. Cl.[5] B29C 45/16, 45/37
U.S. Cl. 264—308 **20 Claims**



1. A method of controlling the dimensions of a hollow plastic product injection molded within the cavity of a mold having a core section and a cavity section defining the mold cavity therebetween and separated by a parting line, comprising stabilizing the core section in relation to the cavity section and comprising the steps of:
(a) injecting a first plastic material into the mold cavity so that only a part of the mold cavity is filled;
(b) cooling the injected first plastic material in the mold cavity;
(c) injecting subsequent to injecting the first plastic material, a second plastic material into the mold cavity so that the

cooled injected first plastic material extending between the core section and the cavity section in said part of the mold cavity is sufficiently solidified to stabilize the core section in relation to the cavity section by impeding movement of the core section in relation to the cavity section caused by injecting the second plastic material, whereby the injected second plastic material fills the mold cavity; and

(d) cooling the injected plastic material in the mold cavity to thereby solidify the product;

the method being characterized by the following additional steps,

step (a) comprising the step of:

(e) continuing the injection of the first plastic material by the second plastic material without intermission;

step (b) comprising the step of:

(f) cooling a portion of the first plastic material so that it is at least partially solidified and so that another portion of the first plastic material remains fluid;

step (c) comprising the step of:

(g) injecting the second plastic material so that the second plastic material displaces some of the fluid first plastic material to thereby provide at least one flow path for the second plastic material to fill the mold cavity and so that some of the at least partially solidified first plastic material stabilizes the core section in relation to the cavity section.

5,008,065

REACTION INJECTION MOLDING METHOD

Kin-ichi Okumura, Kamakura; Koji Chono, Kurashiki; Hiroshi Ozeki, Kurashiki, and Tadao Hamada, Kurashiki, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1989, Ser. No. 380,424

Claims priority, application Japan, Jul. 19, 1988, 63-178260

Int. Cl.[5] B28B *7/38*

U.S. Cl. 264—328.6 **19 Claims**

1. In a process for molding an article wherein a mold-release agent is applied to the surface of a mold and polymerizing in said mold by ring-opening polymerization at least one norbornene monomer containing at least one norbornene group in the presence of a metathesis catalyst system to form a molded product and extracting from said mold said molded product, the improvement which comprises applying to said mold surface a mold release agent selected from the group consisting of organic fluorine compounds and mixtures thereof wherein said mold release agent does not impart whitening to said molded product.

5,008,066

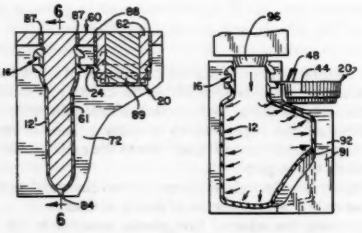
CONTAINER WITH A UNITARY CLOSURE AND METHOD FOR MAKING SAME

Bruce M. Mueller, Crystal Lake, Ill., assignor to Seaquist Closures, Crystal Lake, Ill.

Filed Apr. 6, 1989, Ser. No. 334,301

Int. Cl.[5] B29C *49/06*; B65D *55/16*

U.S. Cl. 264—537 **5 Claims**



1. A method for forming a container having a unitary hollow receptacle and closure comprising the sequential steps of:

(A) molding a preform of thermoplastic material, said molding of the preform including the injection molding of (1) a hollow body, (2) a closure base at one end of said hollow body to define an opening into said hollow body, and (3) a closure cover complementary to and spaced from said closure base opening but connected to said closure base to permit said closure cover to be swung about an axis between (1) a closed position engaged with said closure base for occluding said opening and (2) an open position disengaged from said closure base in the region over said opening when a substance is to be loaded into, or dispensed out of, said opening, said injection molding including providing an initially open assembly of first mold parts including a core and an open split mold having spaced-apart injection mold halves adapted to be positioned about said core relative to an injection mold parting plane, each said injection mold half being movable along a common line of action away from the other mold half to an open position and being movable along said common line of action toward the other mold half to a closed position in which said closed injection mold halves define a flow channel gate and a communicating forming cavity for said preform hollow body, closure base, and closure cover, said core including a first projecting core portion for defining the inside surfaces of said preform hollow body and closure base and having a second projecting core portion for defining the inside surfaces of said closure cover, said injection molding further including subsequently closing said injection mold halves about said first and second projecting core portions and injecting said thermoplastic material through said flow channel gate to mold said preform hollow body, closure base, and closure cover together from a single injection of said material, each said complementary closure base and closure cover being of completed finish, shape, and size upon the completion of step (A); and

(B) after the completion of step (A), blow molding said preform hollow body to form said hollow receptacle extending from said closure base and having a configuration different than said preform hollow body, said blow molding step including (1) providing second mold parts in the form of a blow molding assembly of split blow mold halves initially positioned in an open position about said preform hollow body relative to a blow mold parting plane which has the same planar orientation with respect to said preform as does the injection mold parting plane and, (2) closing said blow mold halves by moving them in opposing directions perpendicular to the blow mold parting plane and parallel to the directions of movement of said injection mold halves.

5,008,067

METHOD OF DOWNHOLE NEUTRON MONITORING

John B. Czirr, 1830 E. 400 North, Mapleton, Utah 84663

Continuation of Ser. No. 76,508, Jul. 22, 1987, abandoned. This application Mar. 7, 1990, Ser. No. 492,395

Int. Cl.[5] G01T *3/00*; G01V *5/00*; G21G *1/06*

U.S. Cl. 376—159 **2 Claims**

1. A method of downhole monitoring neutrons emanating from a pulsed-type neutron source, said neutron source having beam-on and beam-off time periods and positioned in a downhole apparatus comprising the steps of:

(a) using an oxygen containing scintillating material in a detector to monitor neutrons from said neutron source by generating scintillator light as a function of electrons and gamma rays emitted from the product of the ^{16}O (n,p) reaction, said neutron source emitting neutrons having energies greater than 11 MeV;

(b) positioning said detector in said downhole apparatus and within a borehole surrounded by a formation to be studied;

(c) reducing the effects of background gamma radiation from the ^{16}O (n,p) reaction occurring in the formation surrounding said detector by:

(1) setting the bias level of said detector to an energy level of at least 6.7 MeV; and

(2) after setting the bias level, and during the beam-off time period of said neutron source, measuring the combined energy deposition within said scintillating material from both said electrons and said gammas which equals or exceeds said 6.7 MeV bias level, said scintillating material generating scintillator light corresponding to said combined energy deposition;

(d) converting the generated scintillator light to an electrical signal; and

(e) using the electrical signal to record the flux of said neutrons from said neutron source.

5,008,068

PLANT COMPRISING A NUCLEAR REACTOR, MORE PARTICULARLY A CONTROL ROD SYSTEM FOR NUCLEAR REACTOR PLANT

Hermann Straub, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

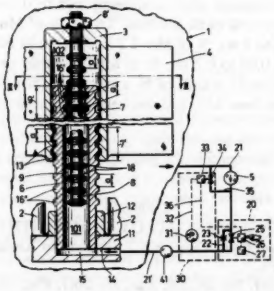
PCT No. PCT/CH88/00009, § 371 Date Sep. 6, 1988, § 102(e) Date Sep. 6, 1988, PCT Pub. No. W088/05595, PCT Pub. Date Jul. 28, 1988

PCT Filed Jan. 14, 1988, Ser. No. 264,960

Claims priority, application Switzerland, Jan. 15, 1987, 00123/87

Int. Cl.[5] G21C *7/16, 17/00*

U.S. Cl. 376—230 **15 Claims**



1. In a nuclear reactor plant, the combination comprising

a pressure vessel for receiving a coolant;

a reactor core in said vessel including a plurality of vertical fuel elements containing fissile material;

tubular vertically movable control rods between said fuel elements, each rod having a coaxial blind bore therein;

absorber plates secured to said control rods and extending between said fuel elements;

a plurality of fixed hollow guide rods, each guide rod being disposed within said bore of a respective control rod to define a first pressure chamber between an upper end of said guide rod and said respective control rod and a first annular gap therebetween communicating said chamber with an interior of said pressure vessel;

a plurality of vertical spindles, each spindle being secured to and within a respective control rod and depending into a respective guide rod to define a second pressure chamber below a lower end of said spindle within said guide rod and a second annular gap communicating said second chamber with said first chamber;

a first restrictor in said first gap to restrict a flow of coolant therethrough;

a second restrictor in said second gap to restrict a flow of coolant therethrough;

conveying means for delivering a flow of pressurized coolant from within said vessel into said second pressure chamber below each respective spindle to vertically move said control rod connected thereto relative to said fuel elements; and

control means for producing pressure surges in said second pressure chamber.

5,008,069

DEVICE FOR COOLING A HEAT-GENERATING MEMBER

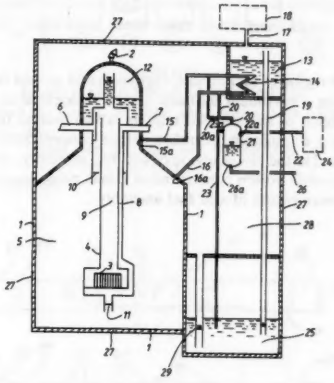
Jan Fredell, Västerås, Sweden, assignor to ABB Atom AB, Västerås, Sweden

Filed Feb. 13, 1990, Ser. No. 479,418

Claims priority, application Sweden, Feb. 13, 1989, 8900480

Int. Cl.[5] G21C *15/18*

U.S. Cl. 376—299 **10 Claims**



1. In a nuclear reactor system which includes a pressure vessel containing a reactor core and an aqueous neutron-absorbing liquid, the improvement wherein a circulation system is connected to said pressure vessel through which liquid and/or steam and any uncondensable gas can circulate, said circulation system including

a cooling device which comprises an evaporator in an evaporating pool,

a first conduit which extends from an outlet opening in an upper part of said pressure vessel to said evaporator,

a second conduit which extends from said evaporator downwardly to an inlet opening in said pressure vessel, said inlet opening being located below said outlet opening,

a discharge vessel that includes at least one outlet for gas and steam and for maintaining a lower pressure therein than in said evaporator, and

a third conduit connected to said second conduit at a point above a bottom of said second conduit and extending to said discharge vessel, said third conduit enabling a small portion of fluid flow in said second conduit to pass therethrough.

5,008,070

FUEL ASSEMBLY

Motoo Aoyama, Mito; Junichi Koyama, Hitachi; Sadao Uchikawa, Katsuta; Yasunori Bessho, Mito; Michihiro Ozawa, Hitachi; Mitsunari Nakamura, Hitachi; Akinobu Nakajima, Hitachi, and Hiromi Maruyama, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 7, 1988, Ser. No. 268,595

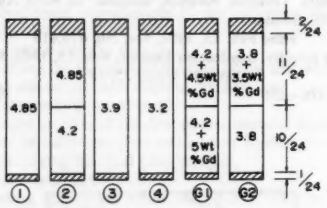
Claims priority, application Japan, Nov. 7, 1987, 62-281639; Jun. 24, 1988, 63-154746

Int. Cl.[5] G21C *3/00*

U.S. Cl. 376—419 **17 Claims**

1. A fuel assembly comprising a plurality of first fuel rods

each of which contains nuclear fuel material but does not contain burnable poison and a plurality of second fuel rods each of which contains nuclear fuel material and burnable poison, characterized in that an amount of the burnable poison in a lower region of said fuel assembly is smaller than that in an upper region of said fuel assembly, and that when each of said second fuel rods is divided into an upper region and a lower



region, a region of said divided regions in said second fuel rods containing a maximum burnable poison concentration Gmax and a region of said divided regions in said second fuel rods containing a minimum burnable poison concentration Gmin are located in the lower region of said fuel assembly, the maximum burnable poison concentration Gmax being located only in the lower region of said fuel assembly.

5,008,071

METHOD FOR PRODUCING IMPROVED TUNGSTEN NICKEL IRON ALLOYS

James R. Spencer, Sayre, and James A. Mullendore, Towanda, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 140,504, Jan. 4, 1988, abandoned. This application Nov. 25, 1988, Ser. No. 275,820

Int. Cl.[5] B22F *3/24*

U.S. Cl. 419—28 **1 Claim**

1. A process for producing rolled sheets of tungsten heavy metal alloy having improved tensile elongation comprising:

(a) forming a relatively uniform blend of elemental metal powders, wherein the blend consists essentially of 93% by weight of tungsten, balance nickel and iron in essentially an 8:2 weight ratio of nickel to iron,

(b) pressing the powder to form a green body in the shape of a bar,

(c) sintering the green body in a reducing atmosphere at a temperature below about 1425° C. for a time sufficient to achieve a partially dense body containing sufficient strength to enable handling, and

(d) sintering the partially dense body to full density and a microstructure consisting essentially of rounded tungsten grains in a continuous second phase containing iron and nickel by liquid phase sintering in a reducing atmosphere at temperature sufficiently elevated and above the melting point of both iron and nickel to achieve liquid phase sintering, said temperature being in the range of from about 1540–1545° C. said sintering of said partially dense body forming a resulting sintered body, and

(e) forming rolled sheets from said resulting sintered body wherein said rolled sheets has a tensile elongation of about 25 percent.

5,008,072

HEAT RESISTANT STEEL AND GAS TURBINE COMPONENTS COMPOSED OF THE SAME

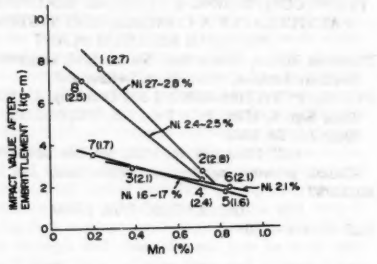
Masao Siga; Yutaka Fukui, both of Hitachi; Mitsuo Kuriyama, Ibaraki; Soichi Kurosawa; Katsumi Iijima, both of Hitachi; Nobuyuki Iizuka; Yosimi Maeno, both of Hitachi; Shintaro Takahashi, Hitachi; Yasuo Watanabe, Katsuta, and Ryo Hiraga, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 10,793, Feb. 4, 1987, Pat. No. 4,850,187. This application May 16, 1989, Ser. No. 352,472

Claims priority, application Japan, Feb. 5, 1986, 61-21956; Mar. 20, 1986, 61-60574

Int. Cl.[5] C22C *38/44*

U.S. Cl. 420—69 **15 Claims**



1. A heat resistant steel containing 0.05 to 0.2 wt. % of C, less than 0.5 wt. % of Si, less than 0.6 wt. % of Mn, 8 to 13 wt. % of Cr, 1.5 to 3 wt. % of Mo, 2.2 to 3 wt. % of Ni, 0.05 to 0.3 wt. % of V, 0.02 to 0.2 wt. % in total of either or both of Nb and Ta, 0.02 to 0.1 wt. % of N, a ratio (Mn/Ni) of said Mn to Ni being less than 0.11, and the balance substantially Fe.

5,008,073

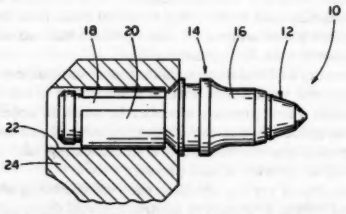
MN-B STEEL ALLOY COMPOSITION

Mark S. Greenfield, Cary, N.C., assignor to Kennametal Inc., Latrobe, Pa.

Division of Ser. No. 39,208, Apr. 16, 1987, Pat. No. 4,886,710. This application Sep. 8, 1989, Ser. No. 404,703

Int. Cl.[5] C22C *38/02*

U.S. Cl. 420—121 **2 Claims**



1. In a Mn-B steel alloy composition, the alloy content is percents by weight consisting essentially of: carbon, 0.33–0.38; manganese, 1.10–1.35; boron, 0.0005 minimum up to an effective amount to improve hardenability; silicon 0.15–0.30; sulfur, 0.045 maximum; and phosphorus, 0.035 maximum, wherein said composition has a minimum hardenability of 47 Rockwell C at the Jominy 6/16 position and a maximum as-rolled hardness of 22 Rockwell C such that without anneal said composition meets hardenability and machinability requirements that make it useful for fabricating mining and construction bit bodies of all sizes.

5,008,074

INOCULANT FOR GRAY CAST IRON

Rodney L. Naro, Worthington, Ohio; James M. Csonka, Valencia, Pa., and Michael A. Merritt, New Haven, W. Va., assignors to American Alloys, Inc., New Haven, W. Va.

Filed Apr. 26, 1990, Ser. No. 514,871
Int. Cl.[5] C22C *33/00*
U.S. Cl. 420—578 5 Claims

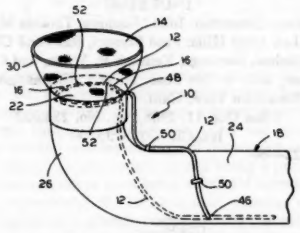
1. An inoculating alloy for gray iron, said alloy consisting essentially of 65.0–70.0% silicon, 8.0–10.0% titanium, 0 to 5% manganese, 2.0–2.5% barium, 1.0–1.5% calcium, 0 to 1.5% aluminum, the balance being iron and incidental impurities.

5,008,075

PREVENTATIVE MAINTENANCE SYSTEM FOR UNDERWATER PIPES

Paul G. Rufolo, 149 Gregory St., Mt. Prospect, Ill. 60056

Continuation-in-part of Ser. No. 464,958, Jan. 16, 1990, abandoned. This application Feb. 13, 1990, Ser. No. 479,337
Int. Cl.[5] B08B *17/02*
U.S. Cl. 422—6 33 Claims



1. An apparatus for the unattended dispersement of chemicals to be mixed into a flowing liquid passing into an underwater pipe, said apparatus comprising a first chemical feed pipe, a second chemical feed pipe, and a water intake pipe, said feed pipes being mounted to said intake pipe and said intake pipe forming part of said underwater pipe, said first feed pipe extending along the length of said intake pipe and being connected to said second feed pipe, said second feed pipe being mounted to said intake pipe at that portion of said intake pipe adjacent an intake opening of said pipe, said second feed pipe including a plurality of dispensing valves extending closely adjacent an entrance of said intake pipe to release chemicals in an unattended manner directly into liquid passed into said intake pipe, sufficient to dispense toxic chemicals substantially throughout the length of said pipe and onto organisms within said pipe, said chemicals being delivered to said second feed pipe through said first feed pipe.

5,008,076

METHOD AND AN ARRANGEMENT FOR THE PRETREATMENT OF A MOVING MATERIAL WEB

Göran Johansson, Harlösa, and Pär Olanders, Lund, both of Sweden, assignors to Roby Teknik Aktiebolag, Lund, Sweden

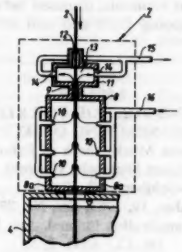
Filed May 3, 1989, Ser. No. 346,658
Claims priority, application Sweden, May 31, 1988, 8802019
Int. Cl.[5] A61L *2/00*
U.S. Cl. 422—28 15 Claims

1. A method for sterilization of a moving material web comprising the steps of:

providing a deep bath containing sterilization liquid heated to a predetermined temperature;

guiding the material web into and out of the bath in a continuous manner; and

applying heat to the material web prior to its entry into the bath containing the heated sterilizing liquid by advancing, the material web through a heating chamber to raise the



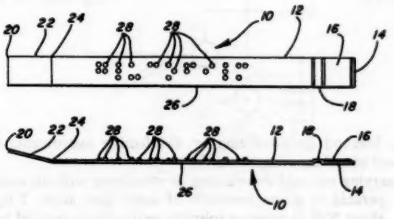
temperature of the material web to a temperature that is at least equal to said predetermined temperature.

5,008,077

EASY HANDLING REAGENT STRIP

Mohammad A. Kheiri, Elkhart, Ind., assignor to Miles Inc., Elkhart, Ind.

Filed Dec. 26, 1989, Ser. No. 457,106
Int. Cl.[5] G01N *31/22*
U.S. Cl. 422—56 7 Claims



1. A reagent strip, comprising:

an elongated carrier,

a diffusion reagent area on a first portion of said elongated carrier, and

an elongated handle constituting a second portion of said elongated carrier;

wherein said elongated handle includes at least one projection extending downwardly from said plane to render said reagent strip susceptible to tipping on a flat surface.

5. A method of forming a reagent strip, comprising the steps of:

forming an elongated planar carrier defining a body of a reagent strip, said elongated planar carrier having a first end portion and a second end portion;

securing a dry reagent pad to said first end portion of said elongated planar carrier; and

forming at least one projection on said second end portion to extend downwardly from the plane of said elongated planar carrier to render the reagent strip susceptible to tipping on a flat surface.

5,008,078

INTEGRAL MULTI-LAYER ANALYSIS ELEMENT

Nakatsugu Yaginuma, and Takaki Arai, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 18, 1988, Ser. No. 182,707
Claims priority, application Japan, Apr. 16, 1987, 62-94138
Int. Cl.[5] G01N *31/22*
U.S. Cl. 422—56 7 Claims

1. A multi-layer analysis element comprising an endogenous ammonia trapping layer, an ammonia producing layer comprising a reagent capable of reacting with an ammonia producing

substance to produce gaseous ammonia, and at least one layer essentially incapable of trapping ammonia and essentially incapable of producing ammonia and capable of preventing the diffusion of gaseous ammonia, disposed between said endogenous ammonia trapping layer and said ammonia producing layer.

5,008,079

APPARATUS AND METHOD FOR STERILIZING OR DISINFECTING OBJECTS

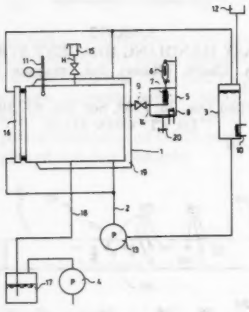
Peter Wutzler; Horst Mücke, both of Erfurt, German Democratic Rep., and Lauri Santasalo, Helsinki, Finland, assignors to OY Santasalo-Sohlberg AB, Finland

Filed Jan. 19, 1989, Ser. No. 299,968

Claims priority, application Finland, Jan. 19, 1988, 880221

Int. Cl.[5] A61L *2/18*

U.S. Cl. 422—28 **13 Claims**



1. Method for sterilizing or disinfecting instruments in a closed chamber, comprising

carrying out said disinfecting or sterilizing with an organic peracid in a concentration of more than about 7 up to about 50% in aqueous solution, said organic peracid being a powerful oxidizing agent and wherein said disinfecting or sterilizing is additionally carried out with a quantity of agent of about 1 to 100 mg per liter of chamber volume.

5,008,080

SOLID-PHASE ANALYTICAL DEVICE AND METHOD FOR USING SAME

William E. Brown, III, Grayslake; Sarah E. Safford, Libertyville, and John M. Clemens, Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 173,979, Mar. 28, 1988, Pat. No. 4,916,056, which is a continuation-in-part of Ser. No. 831,013, Feb. 18, 1986, abandoned, which is a continuation-in-part of Ser. No. 784,416, Oct. 4, 1985, abandoned. This application Feb. 6, 1990, Ser. No. 475,591

The portion of the term of this patent subsequent to Apr. 10, 2007, has been disclaimed.

Int. Cl.[5] G01N *31/22, 33/58*

U.S. Cl. 422—56 **12 Claims**

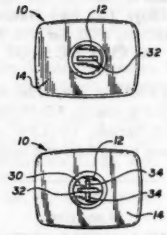
1. A solid phase assay device for use in a binding assay to determine the presence or amount of an analyte in a fluid sample through the use of a label capable of producing a detectable response, said device comprising a reaction site having:

a negative control area,

a positive control area within said negative control area containing immobilized binding reagent for said label, and

an analyte binding area within said negative control area containing immobilized binding reagent for analyte in the sample,

said positive control area being shaped such that, in the presence or absence of analyte in the sample, a minus symbol is displayed representing a negative result of a valid assay, and



said analyte binding area being shaped such that, taken together with said minus symbol in the presence of said label and analyte, a plus symbol is formed representing a positive result of a valid assay.

5,008,081

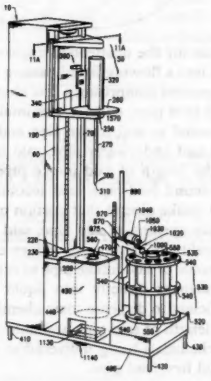
METHOD AND APPARATUS FOR AUTOMATIC MELT INDEXING

David A. Blau, Cupertino; John Meadows; Thomas M. Sherlock, both of Los Altos Hills; Fred Stengel, Redwood City; Robert M. Studholme, Saratoga; Kenneth R. Wada, and Christopher J. Kepner, both of San Jose, all of Calif., assignors to KD Group, Mountain View, Calif.

Filed Oct. 11, 1988, Ser. No. 256,022

Int. Cl.[5] G01N *35/00*

U.S. Cl. 422—64 **11 Claims**



1. An apparatus for automatically carrying out a melt indexing test relating to a substance, comprising:

a plurality of cartridges, where each cartridge includes a bore for receiving a quantity of the substance to be tested and further includes a plug disposed at a first end of the bore, with each plug having an orifice;

a piston adapted for placement within said each said bore of said cartridges, each said piston for resting adjacent said quantity of the substance;

a heater having a receptacle for receiving a cartridge and for heating the cartridge and the substance within the cartridge, for melting the substance, thus forming a resin;

means for holding said plurality of cartridges;

means for grasping each cartridge and transferring the cartridge to the receptacle;

means for applying a force to said piston for tamping the substance when the substance is in a solid state and for driving said resin through said orifice as an extrudate; and

processor means having a memory for storing a predeter-

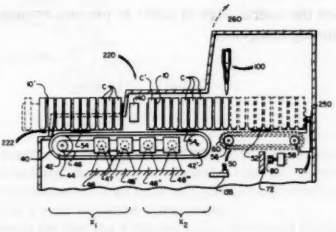
mined sequence of commands relating to the melt index test, for automatically controlling said holding means, said grasping and transferring means, and said force applying means.

5,008,082

ANALYZERS USING LINEAR SAMPLE TRAYS WITH RANDOM ACCESS

James D. Shaw, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 25, 1988, Ser. No. 236,588
Int. Cl.[5] G01N *35/02, 35/04, 35/06*
U.S. Cl. 422—65 11 Claims



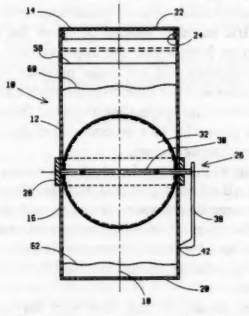
1. In an analyzer comprising supply means for supplying patient sample, aspirating and dispensing means for aspirating sample from said supply means and dispensing sample onto a test element, supply means for supplying test elements, and means for moving said aspirating and dispensing means in the analyzer relative to said supply means along a predetermined path and into operative association with said sample and a test element, respectively; the improvement wherein said supply means comprise (a) a plurality of trays each comprising means for holding a plurality of sample containers in a linear array, (b) a separate linear track for each of said trays, in which said trays are mounted, and (c) means for reciprocating each of said trays within its respective track and positioning each of said trays so that each said tray intersects said path of said aspirating and dispensing means.

5,008,083

APPARATUS FOR CENTRIFUGAL SEPARATION OF COAL PARTICLES

William Dickie, New Eagle; Joseph A. Cavallaro, Mt. Keesport, and Richard P. Killmeyer, Pleasant Hills, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 30, 1988, Ser. No. 238,213
Int. Cl.[5] B01L *11/00;* B65D *25/06;* B03B *5/32*
U.S. Cl. 422—101 5 Claims



1. Apparatus for separating by centrifugation relatively high density particles from relatively low density particles suspended in a solution which includes a liquid having a density intermediate of the densities of the high and low density particles comprising:

a cell configured for placement in a centrifuge having a lower portion in which the high density particles reside and form a sink layer when they are separated from the low density particles, an upper portion in which the low density particles reside and form a float layer after separation from the high density particles, a central portion between said lower portion and said upper portion, and an open top;

means for selectively sealing and unsealing said open top to prevent hazardous fumes from escaping;

means for selectively isolating the sink layer from the float layer when said top is sealed, without unsealing said top, and without disturbing either layer;

means for locking for maintaining the isolating means in an open position; and

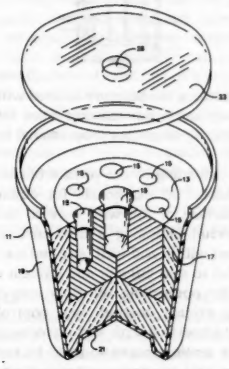
said isolating means including a rod extending horizontally through the cell, and a closure means secured to the rod.

5,008,084

INSULATED CONTAINER FOR BIOLOGICAL SAMPLES

Louis E. Kelley, Wyncote, Pa., assignor to Instruments for Research and Industry I[2]R, Inc., Cheltenham, Pa.

Filed Aug. 13, 1990, Ser. No. 565,939
Int. Cl.[5] B01L *3/00*
U.S. Cl. 422—102 10 Claims



1. An insulated container comprising a container having a central metal core, said core having a multiplicity of drilled holes constructed so as to receive a multiplicity of microfuge tubes in said core and foamed thermal insulation surrounding said core.

5,008,085

APPARATUS FOR THERMAL TREATMENT OF A HYDROCARBON STREAM

Richard L. Bain, Golden, and John R. Larson, Boulder, both of Colo., assignors to Resource Technology Associates, Tulsa, Okla.

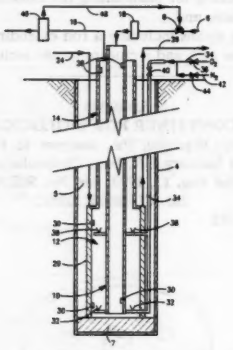
Continuation-in-part of Ser. No. 58,878, Jun. 5, 1987, Pat. No. 4,818,371. This application Mar. 31, 1989, Ser. No. 332,508
Int. Cl.[5] G05D *7/00*
U.S. Cl. 422—109 3 Claims

1. A vertical tube reactor apparatus disposed within a substantially vertical well bore, said apparatus being suitable for reducing the viscosity of hydrocarbons, said apparatus comprising:

(a) an influent conduit in fluid communication with an efflu-

ent conduit comprising concentrically arranged inner and outer conduits, each having an upper and a lower zone, wherein said influent conduit is said inner conduit and said effluent conduit is said outer conduit, said influent conduit adapted to receive an influent hydrocarbon stream and conduct said influent stream substantially downward, and said effluent conduit adapted to conduct an effluent product stream substantially upward, wherein said conduits provide heat-exchange contact between influent stream and said effluent product stream to produce a heated influent stream;

(b) an oxidant injection nozzle located within said effluent conduit so as to introduce oxidant into the core portion of said heated influent stream substantially parallel to the flow of said stream to produce an effluent product stream;



(c) means for sensing temperature located within at least one of said lower zones downstream from said nozzle, said means producing an output proportional to said temperature;

(d) a conduit extending to the surface of the well bore and being connected to the nozzle for conducting oxidant from the surface of the well bore to said nozzle, said oxidant conduit including a flow metering means and being located within said well bore and travelling substantially parallel to said influent and effluent conduits; and,

(e) a means for controlling the flow rate of said oxidant within said oxidant conduit, said control means being operatively associated with said metering means and said temperature sensing means so as to be responsive to the output from said temperature sensing means and adjust said oxidant flow rate in a preselected proportion to said output.

5,008,086

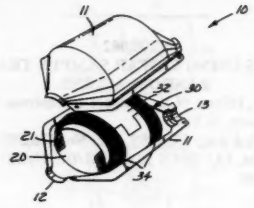
EROSION RESISTANT MOUNTING COMPOSITE FOR CATALYTIC CONVERTER

Richard P. Merry, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 28, 1988, Ser. No. 263,683
Int. Cl.[5] B01D *50/00*
U.S. Cl. 422—180 **18 Claims**

1. An improved catalytic converter including a metallic casing, a ceramic catalytic element disposed within the casing, and a mounting composite disposed between the catalytic element and the metallic casing for positioning the catalytic element within the casing and for absorbing mechanical and thermal shock, said mounting composite comprising a resilient, flexible, high temperature resistant intumescent mounting mat having a lateral edge, wherein the improvement comprises:

a strip of metal fabric positioned between at least a portion of the lateral edge of said mounting mat and said casing so to



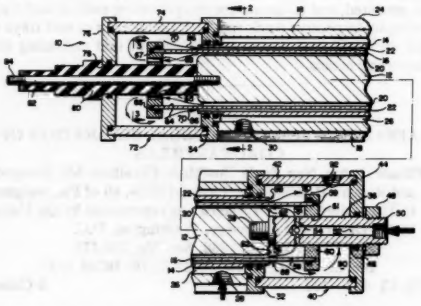
cover the lateral edge in order to prevent erosion of said mounting composite.

5,008,087

OZONE GENERATOR APPARATUS AND METHOD

Douglas R. Batchelor, Chicago, Ill., assignor to American Ozone Systems, Inc., Chicago, Ill.

Filed Jun. 6, 1990, Ser. No. 534,035
Int. Cl.[5] B01J *19/08*
U.S. Cl. 422—186.22 **13 Claims**



1. In a tubular type ozone generator having elongated inner and outer concentrically spaced electrodes with an elongated tubular dielectric member spaced between the electrodes for developing ozone from a gas, the improvement comprising:

means for supplying said gas under pressure between one of the electrodes and the dielectric member and enabling said gas to traverse the space therebetween from a first end of the ozone generator to a second end of the ozone generator for developing ozone;

sealing means at the second end of said ozone generator for receiving all of said gas and the developed ozone and directing same to the space between said dielectric member and the other of said electrodes and enabling said gas and ozone to pass therebetween from said second end of the ozone generator to said first end for developing more ozone; and

ozone outlet means at said first end for communicating ozone from said ozone generator.

5,008,088

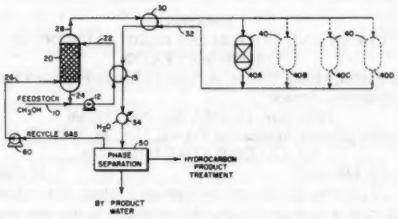
METHANOL-GAS SATURATOR FOR CATALYTIC CONVERSION SYSTEM

Dietmar R. A. Fremuth, Plainsboro, N.J.; Alan E. Rogers, Wycombe, Pa., and John C. Zahner, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 484,656, Apr. 13, 1983, Pat. No. 4,808,764. This application Jul. 13, 1988, Ser. No. 218,184

Int. Cl.[5] B01J *8/00*

U.S. Cl. 422—234 7 Claims



1. A reactor system for catalytically converting methanol to gasoline boiling range hydrocarbons by contacting methanol in a gaseous stream with an acid medium pore crystalline zeolite catalyst in a reaction zone comprising:

(a) means for feeding a heated liquid methanol feedstream to a multi-phase gas-liquid saturator contact unit at an inlet temperature substantially below the feedstock boiling point under superatmospheric process pressure;

(b) means for contacting the feedstock in a contact tower with sufficient compressed recycle gas from the reactor system to partially vaporize feedstock, thereby forming a gaseous methanol-recycle stream, said contact tower having an upper liquid reactant feedstream inlet above a counter-current contact section, a lower recycle gas inlet, an upper gas outlet for removing vaporized methanol in mixture with recycle gas, and a lower liquid outlet for unvaporized methanol, whereby vaporized methanol can enter the reaction zone only with recycle diluent gas;

(c) adiabatic reactor means for contacting a heated gaseous methanol-recycle stream directly with a fixed catalyst bed in the reaction zone to convert methanol to gasoline hydrocarbon product and a gaseous by-product;

(d) means for cooling reactor system effluent in heat exchange relationship with the liquid methanol feedstream to heat the liquid methanol and recover liquid hydrocarbon product;

(e) separator means for separating gaseous by-product from the liquid hydrocarbon product; and

(f) means for compressing and recycling gaseous by-product from separator means (e) to reactor means (b).

5,008,089

RECOVERY OF ALUMINA FROM BAUXITE

Gillian M. Moody, Brighouse, and Christine A. Rushforth, Bradford, both of England, assignors to Allied Colloids Limited, Great Britain

Filed Oct. 13, 1989, Ser. No. 421,165

Claims priority, application United Kingdom, Oct. 14, 1988, 8824176

Int. Cl.[5] C01F *7/06*

U.S. Cl. 423—121 15 Claims

1. In a process in which bauxite is digested in an aqueous alkaline liquor and the resultant red mud is flocculated with a flocculating agent and separated from the digestion liquor in a primary separation stage, the overflow liquor of the primary separation stage is optionally subjected to a secondary clarification stage in which suspended red mud particles are flocculated and separated from the liquor, and the red mud from the said primary separation stage and optional secondary clarification stage is then washed in a plurality of sequential wash stages in each of which the mud is washed with a wash liquor, flocculated with a flocculating agent and separated from the wash liquor, and the flocculating agent in at least one stage selected from the said primary separation stage, secondary clarification stage and the wash stages comprises a synthetic anionic polymeric flocculant, the improvement wherein the flocculating agent further comprises at least about 0.02 mg/l of a dextran having a molecular weight of at least about 500,000, wherein said synthetic anionic polymeric flocculant has a molecular weight of at least about 0.5 million, and is a water soluble polymer formed from 40–100% anionic monomer and 60–0% non-ionic monomer, and wherein the anionic monomer is selected from the group consisting of (meth) acrylic acid, (meth) allylsulfonic acid, vinyl sulfonic acid and 2-acrylamido-2-methyl propane sulfonic acid.

5,008,090

CATALYTIC PROCESS FOR MINIMIZING THE H_2S EMISSIONS FROM AUTOMOTIVE EXHAUST

George C. Joy, III, Arlington Heights; George R. Lester, Park Ridge, and Richard E. Marinangeli, Arlington Heights, all of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 62,024, Jun. 15, 1987, Pat. No. 4,760,044. This application May 23, 1988, Ser. No. 197,172

Int. Cl.[5] B01D *47/00;* B01J *8/02*

U.S. Cl. 423—212 18 Claims

1. A method of minimizing the formation of hydrogen sulfide when automotive exhaust is contacted with a catalytic composite comprising contacting said exhaust with a catalytic composite comprising a mixture of (1) a primary refractory inorganic oxide support having dispersed thereon at least one of a first active component selected from the group consisting of rare-earth oxides and (2) a secondary refractory inorganic oxide support selected from the group consisting of zirconia, titania, ceria, silica, magnesia, natural and synthetic zeolites having dispersed thereon at least one of a second active component which is an oxide of a metal, the metal selected from the group of metals which form a stable sulfide under fuel rich conditions, said second active component which is dispersed on the secondary support before formation of the mixture to effect a separation between the second active component and the primary support, and said mixture having at least one main catalytic metal selected from the group consisting of platinum, palladium, rhodium, ruthenium and iridium deposited thereon.

5,008,091

METHOD FOR PURIFYING AIR

Pawan K. Bassi, Benicia, Calif.; Kenneth C. Eastwell, Penticton, Canada; James S. Goudey, Calgary, Canada, and Mary E. Spencer, Edmonton, Canada, assignors to Governors of the University of Alberta, Edmonton, Canada

Filed Nov. 29, 1988, Ser. No. 277,254

Int. Cl.[5] B01J *8/00;* C07C *11/24;* B01D *47/00*

U.S. Cl. 423—245.1 9 Claims

1. A method of removing low molecular weight hydrocarbons selected from the group consisting of methane, ethane and ethylene from air, comprising the steps:

(a) preheating the air;

(b) passing the preheated air through a heated catalytic bed comprising a mixture of platinized, heat-conductive pellets and metal turnings, the volume ratio of metal turnings to platinized pellets lying between about 1:2 and about 2:1; and

(c) the bed being contained in an annular space defined between two substantially vertically oriented and substantially concentric tubes made of heat-conductive material, having heating means applied against the exterior of the outermost tube, in which step (a) is performed by passing the air downwardly through the innermost of the two tubes to the bottom thereof, and in which step (b) is performed by passing the air upwardly through the bed between the tubes.

5,008,092

HOMOGENEOUS POWDERS OF YTTRIUM-STABILIZED QUADRATIC ZIRCONIA

Azzdddine Samdi, Casablanca; Rene Paris, Lyons, and Marc Roubin, Meyzieu, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Sep. 29, 1988, Ser. No. 250,835

Claims priority, application France, Sep. 29, 1987, 87 13421

Int. Cl.[5] C01F *17/00*

U.S. Cl. 423—263 **23 Claims**

1. A process for the preparation of a homogeneous powder of yttrium-stabilized, substantially quadratic zirconia, comprising (a) adjusting the pH of a mixed aqueous solution of zirconyl and yttrium acetates to a value of at least 5 so as to form a soluble mixed acetate of yttrium and zirconium, (b) eliminating solvent from such mixed aqueous solution so as to produce a solid residue of zirconium/yttrium acetate, and (c) pyrolyzing the solid residue resulting from said step (b) so as to produce a homogeneous powder of yttrium-stabilized, substantially quadratic zirconia.

5,008,093

ANHYDROUS COMPLEXES OF PVP AND HYDROGEN PEROXIDE

John J. Merianos, Middletown, N.J., assignor to GAF Chemicals Corporation, Wayne, N.J.

Filed Nov. 8, 1989, Ser. No. 434,943

Int. Cl.[5] C01B *15/01*

U.S. Cl. 423—272 **14 Claims**

1. A high purity product which is stable complex of PVP and H_2O_2 in a molar ratio of between about 2:1 and about 1:1, respectively, and which is obtained directly as a uniform, free-flowing, fine, white powder with essentially little or no water or free hydrogen peroxide contained therein by reaction in a substantially anhydrous solvent between PVP and H_2O_2 in substantially the molar ratio predetermined for the complex and removing the solvent therefrom.

5. An anhydrous process of preparing a substantially anhydrous complex of PVP and H_2O_2 which is a uniform, fine white powder comprising reacting PVP and H_2O_2 in an anhydrous organic solvent.

5,008,094

CRYSTALLINE (METALLO)SILICATES AND PROCESS FOR PREPARING SUCH (METALLO)SILICATES

Johannes J. Keijsper; Munro Mackay, and Martin F. M. Post, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 28, 1989, Ser. No. 399,189

Claims priority, application United Kingdom, Sep. 9, 1988, 8821237

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—328 **12 Claims**

1. A crystalline (metallo)silicates having in the as-synthesized, anhydrous form a molar composition expressed by the formula:

$$(0\text{–}9)M_{2/n}O.(4\text{–}9)R_2).100SiO_2.(0\text{–}2)Al_2O_3,$$

wherein M represents an alkali or alkaline earth metal ion of valency n R represents a tetremthylammonium cation, and having an X-ray diffraction pattern containing at least the following lines:

d(A)	Intensity
10.27 ± 0.2	s-vs
4.89 ± 0.1	w-m
4.18 ± 0.1	m
3.85 ± 0.1	m
3.82 ± 0.1	w-m
3.62 ± 0.1	w-m
3.48 ± 0.1	m-vs

-continued

d(A)	Intensity
3.32 ± 0.05	w-m
3.23 ± 0.05	w-m

5,008,095

CLEAR AND COLORLESS BASIC ALUMINUM CHLOROSULFATES

Jean Boutin, Mions, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Filed Nov. 16, 1988, Ser. No. 271,706

Claims priority, application France, Nov. 16, 1987, 87 15775

Int. Cl.[5] C01B *17/45;* C01F *7/74*

U.S. Cl. 423—467 **11 Claims**

1. A process for the preparation of a clear and colorless solution of a basic aluminum chlorosulfate, comprising reacting a slurry of calcium chloride and calcium carbonate with aluminum sulfate, separating calcium sulfate solids and a solution of basic aluminum chlorosulfate from the medium of reaction, and flocculating said solution of basic aluminum chlorosulfate with at least one nonionic or cationic polyelectrolyte flocculant.

5,008,096

CATALYST ENHANCED GENERATION OF CHLORINE DIOXIDE

James P. Ringo, Norman, Okla., assignor to Bio-Cide International, Inc., Norman, Okla.

Filed Apr. 3, 1990, Ser. No. 504,613

Int. Cl.[5] C01B *11/02*

U.S. Cl. 423—477 **20 Claims**

1. A method for enhancing generation of chlorine dioxide from an aqueous medium containing sodium chlorite comprising:

contacting the sodium chlorite present in the aqueous medium with an amount of gaseous chlorine effective to react with the sodium chlorite in the presence of a catalytic amount of a catalyst selected from the group consisting of an elemental transition metal, a transition metal oxide and mixtures thereof for a period of time effective to generate chlorine dioxide, the transition metal selected from Group 5B, 6B, 7B, 8 and mixtures thereof.

5,008,097

AQUEOUS SOLUTION CONTAINING A NEW FERRIC FERROUS SALT FE_2CL_5 AND METHOD OF PRODUCING SAME

Shoji Yamashita, Nagoya, Japan, assignor to I.B.E. Co., Ltd., Aichi, Japan

Continuation-in-part of Ser. No. 655,220, Sep. 27, 1984, abandoned. This application Aug. 2, 1988, Ser. No. 227,626

Claims priority, application Japan, Mar. 6, 1984, 59-43209; Sep. 18, 1984, 59-195287

The portion of the term of this patent subsequent to Jan. 10, 2006, has been disclaimed.

Int. Cl.[5] B32B *15/04;* C01G *49/10*

U.S. Cl. 423—493 **11 Claims**

1. An aqueous solution of a new ferric ferrous salt Fe_2Cl_5.

5,008,098

METHOD OF COMBUSTION NEUTRALIZATION OF LIQUID WASTE PRODUCTS

Mikhail Bernadiner, ulitsa Bakuleva, 12, kv. 24, and Vladimir V. Zhizhin, ulitsa Pervomaiskaya, 10, korpus 1, kv. 30, both of Moscow, U.S.S.R.

PCT No. PCT/SU87/00073, § 371 Date Mar. 1, 1988, § 102(e) Date Mar. 1, 1988, PCT Pub. No. WO88/00671, PCT Pub. Date Jan. 28, 1988

PCT Filed Jun. 19, 1987, Ser. No. 228,755

Claims priority, application U.S.S.R., Jul. 14, 1986, 4080495

Int. Cl.[5] F23C 5/00; F27B 3/22; C01B 7/00; F23G 7/00

U.S. Cl. 423—659 8 Claims

1. In a method of combustion neutralization of liquid waste products containing organohalides, comprising treating said liquid waste products with an alkali reagent, introducing the resulting mixture in the form of a spray along a path into a stream of high-temperature fuel combustion products and subsequently removing the exhaust gases, the improvement which comprises introducing sprayed water between the stream of the combustion products and the path of the sprayed mixture, the sprayed water consumption being no less than 1.2 kg per kg of said mixture of waste products with the alkali reagent and no more than 2.5 kg per kg of the fuel being used.

5,008,099

AMYLOIDOSIS AND ALZHEIMER'S DISEASE DIAGNOSTIC ASSAY AND REAGENTS THEREFOR

Steven C. Quay, Los Altos Hills; Scott M. Rocklage, Saratoga, and Warren K. Miller, Cupertino, all of Calif., assignors to Salutar, Inc., Sunnyvale, Calif.

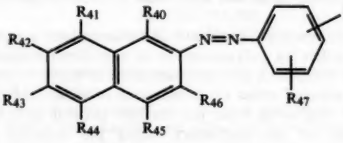
Division of Ser. No. 178,402 Apr. 6, 1988 which is a continuation-in-part of Ser. No. 35,837 Apr. 8, 1987, abandoned.

Int. Cl.[5] A61K 49/02; C07C 245/00

U.S. Cl. 424—1.1 23 Claims

1. An amyloid binding diazo compound of Formula III or Formula IV or a water-soluble non-toxic salt thereof:

(III)



wherein:

I^* is a radioactive iodine moiety;

R_{40} R_{41} are hydrogen hydroxy or amino, and R_{40} and R_{41} are not the same group;

R_{42}, R_{43}, R_{44}, R_{45} and R_{46} are sulfo; and sulfo is not present on adjacent carbons; and

R_{47} is hydrogen, methyl or carboxy.

5,008,100

OIL-IN-WATER EMULSIONS CONTAINING POLYETHYLENE

Julius R. Zecchino, Kinnelon, N.J.; Natrajan Krishnaswamy, Spring Valley, N.Y.; Pamela A. Clement, Clark, and Anthony Vargas, Mahwah, both of N.J., assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.

Filed Aug. 11, 1989, Ser. No. 392,835

Int. Cl.[5] A61K 7/42

U.S. Cl. 424—59 9 Claims

1. A stable oil-in-water emulsion sunscreen composition comprising from about 20% by weight to about 80% by weight water, from about 0.5% by weight to about 20% by weight oil-in-water emulsion forming surfactants, from about 0.5% by weight to about 30% by weight propylene glycol myristyl ether acetate, from about 0.2% by weight to about 5% by weight polyethylene, from about 0.5% by weight to about 30% by weight sunscreen agents, from about 0.5% by weight to about 10% by weight absorbents selected from the group consisting of aluminum starch octenyl succinate and nylon, from about 0.1% by weight to about 10% by weight humectants, 0% to about 25% by weight skin compatible non-silicone oils and hydrocarbons, and 0% to about 30% by weight silicone oils.

5,008,101

SUNSCREEN FORMULATION CONTAINING A PHENYL FUNCTIONAL ORGANOSILICON COMPOUND

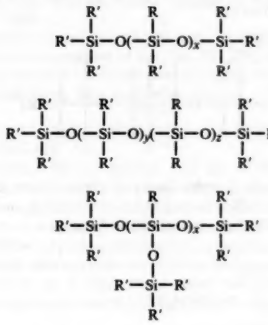
Helen M. Klimisch, and Regina M. Malczewski, both of Midland County, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 5, 1989, Ser. No. 446,267

Int. Cl.[5] A61K 7/40, 7/42, 7/44

U.S. Cl. 424—59 21 Claims

1. A method of increasing the absorbance of ultraviolet light by ultraviolet light absorbing sunscreen compounds which are applied to skin to protect the skin from excessive exposure to sunlight comprising forming a mixture which includes at least one sunscreen compound and an effective amount of a phenyl functional siloxane, applying the mixture to the skin to be protected from excessive exposure to sunlight, and exposing the skin including the mixture of the sunscreen compound and the phenyl functional siloxane to light in the ultraviolet spectrum, the phenyl functional siloxane having the formula selected from the group consisting of



wherein R is a phenyl radical, R' is an alkyl radical having from one to seven carbon atoms, x is an integer of from one to one thousand, x and y are integers the sum of which is between two and one thousand.

5,008,102

BIOCOMPATIBLE INTRAOCULAR LIGHT-SCREENING COMPOSITIONS AND METHODS OF INTRAOCULAR LIGHT SCREENING

Kenneth K. York, 2300 N. Edgemont, Los Angeles, Calif. 90027

Continuation-in-part of Ser. No. 833,896, Feb. 26, 1986, abandoned. This application Dec. 23, 1987, Ser. No. 137,247

Int. Cl.[5] A61K 7/40, 7/42

U.S. Cl. 424—59 10 Claims

1. A method of protecting ocular tissues such as, but not limited to, the lens, vitreous and retina of an eye from damage caused by light selected from the group consisting of ultraviolet light, short wavelength visible light, visible light, and infrared light, comprising placing intraocularly between the source of the light and said ocular tissues, in an amount sufficient to prevent a substantial amount of said light from reaching said tissues, a temporary light-absorbing or screening substance or composition substantially undamaging to intraocular eye tissues in an amount sufficient to absorb or screen said light, said substance or composition being adapted for elimination from

intraocular eye tissues over a relatively short period of time after said placement.

5,008,103

SILICONE SURFACTANTS

William J. Raleigh, Rensselaer; Raymond J. Thimineur, Scotia, and Anthony A. Zotto, Troy, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Dec. 29, 1988, Ser. No. 291,909

Int. Cl.[5] A61K *7/32, 7/34, 7/38*

U.S. Cl. 424—66 **1 Claim**

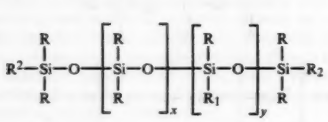
1. An antiperspirant emulsion composition comprising (a) polar liquid, containing an aqueous solution of an antiperspirant salt as a discontinuous phase;

(b) a volatile liquid having a normal boiling point less than 250° C. as a continuous phase, said volatile liquid being selected from the group consisting of methylsiloxane fluids having the average unit formula

$$(CH_3)_aSiO_{(4-a)/2}$$

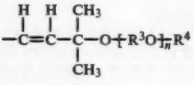
wherein a has an average value of from 2 to 3 inclusive and paraffinic hydrocarbon fluids;

(c) a polysiloxane surface active agent comprising polymers of the formula (I):



(I)

wherein each R individually is chosen from the group consisting of alkyl having from 1 to 4 carbon atoms; R^1 is a polyoxyalkylene radical of the formula



(II)

wherein each R^3 individually is an alkylene having from 2 to 6 carbon atoms, R^4 is chosen from the group consisting of R, acyl groups having at least 2 carbon atoms, and hydrogen, and n has a value from at least 1 to about 200; each R^2 individually is chosen from the group consisting of R and R^1; x has a value from about 5 to about 400; and y has a value of at least 1 except that when R^2 is R^1, y may be zero, and (d) an organic oil-in-water type surfactant having an HLB value of from 8 to 18 inclusive, which may or may not be present.

5,008,104

QUATERNIZED NITROGEN CONTAINING COMPOUNDS

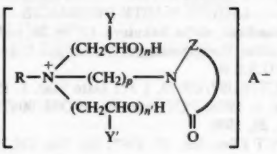
Ratan K. Chaudhuri, Butler; David J. Tracy, Lincoln Park, and Robert B. Login, Oakland, all of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Filed Jun. 22, 1989, Ser. No. 370,226

Int. Cl.[5] C07D *223/10, 211/76, 207/26;* **A61K** *7/06*

U.S. Cl. 424—70 **5 Claims**

1. A quaternized compound having the formula



wherein n and n' are each independently integers having a value of from 1 to 25; p is an integer having a value of from 1 to 4; Y and Y' are each independently H or CH_3; R is linear alkyl, alkenyl, or amidoalkyl having from 8 to 22 carbon atoms and is optionally substituted with C_1 to C_4 alkyl; Z is linear alkylene having from 3 to 8 carbon atoms and is optionally substituted with lower alkyl and A^- is an anion.

5. A composition containing the compound of claim **1** and an inert carrier therefor.

5,008,105

COMPOSITION AND PROCESS FOR TREATING KERATINIC SUBSTANCES WITH AT LEAST ONE ANIONIC POLYMER AND AT LEAST ONE QUATERNIZED PROTEIN

Jean F. Grollier, Paris, and Claude Dubief, Le Chesnay, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 665,386, Oct. 26, 1984, Pat. No. 4,796,646. This application Dec. 15, 1988, Ser. No. 284,683

Claims priority, application Luxembourg, Oct. 28, 1983, 85067

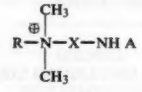
Int. Cl.[5] A61K *7/06, 7/075, 7/13, 7/135*

U.S. Cl. 424—70 **31 Claims**

6. A composition for the cosmetic treatment of hair, comprising, in a cosmetically acceptable medium which is suitable for application to said hair a strongly cationic quaternised protein and either an anionic latex or an amphoteric polymer, wherein:

the anionic functional groups of said anionic latex are provided either by polymerisation or copolymerisation of anionic monomers, said polymerisation or copolymerisation is effected either by combination of an anionic free radical originating from the reaction initiator with the monomer or the monomers during the initiation of polymerisation of said monomers or by juxtaposition of these two processes of synthesis or alternatively by the introduction of end groups by a chain transfer reaction in the second process employing a reaction initiator;

said strongly cationic quaternised protein has the formula:



(I)

in which A denotes a protein residue derived from hydrolysates of collagen protein, R denotes a lipophilic group containing up to 30 carbon atoms;,

said amophoteric polymer contains two moieties, moiety A and moiety B, which are distributed statistically in said amphoteric polymer chain such that

moiety A is derived from a monomer that contains at least one basic nitrogen atom and moiety B is derived from an acidic monomer that contains at least one carboxylic or sulphonic group, or

moieties A and B are groups that are derived from zwitterionic monomers of caroboxybetaines or are cationic polymer chains that contain secondary, tertiary or quaternary amine groups such that at least one of said amine groups includes a carboxylic or sulphonic group

connected to said amine group via a hydrocarbon radical, or

moieties A and B form part of a chain of a polymer that contains an α, β-ethylenedicarboxylate moiety in which one of the carboxylic groups has reacted with a polyamine that contains one or more primary, secondary, or tertiary amine groups; and

the concentration of said strongly cationic quaternised protein and said anionic latex or amphoteric polymer is between 0.01 and 10% by weight.

5,008,106

METHOD FOR REDUCING THE MICROBIAL CONTENT OF SURFACES WITH A MICROBIOCIDAL, ANHYDROUS COMPLEX OF PVP-H_2O_2

John J. Merianos, Middletown; Herbert A. Lieberman, Livingston, and Robert B. Login, Oakland, all of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Filed Dec. 14, 1989, Ser. No. 450,695

Int. Cl.[5] A61K *31/79;* **C01B** *15/01*

U.S. Cl. 424—80 **29 Claims**

1. A method for reducing the microbial content of surfaces which comprises contacting said surface with a microbiocidal amount of a stable complex of PVP and H_2O_2 containing between about 3 and 24% by weight of H_2O_2 in an anhydrous organic solvent which is obtained directly as a uniform, free-flowing, fine white powder by reaction between PVP and H_2O_2 in substantially the same weight ratio as predetermined for the complex.

5,008,107

ATTRACTANT COMPOSITION FOR SYNANTHROPIC FLIES

William B. Warner, Phoenix, Ariz., assignor to Farnam Companies, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 472,708, Jan. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 197,696, May 23, 1988, abandoned, which is a continuation of Ser. No. 889,217, Jul. 25, 1986, abandoned. This application Jun. 6, 1990, Ser. No. 534,292

Int. Cl.[5] A01N *25/00*

U.S. Cl. 424—84 **10 Claims**

1. A synergistic attractant composition for synanthropic flies which comprises:

(a) a feeding attractant selected from the group consisting of indole and skatole; said attractant being presented in a quantity within the approximate range of 0.01 to 0.10 weight percent;

(b) cis-9-tricosene present in a quantity within the approximate range of 0.025 to 1.44 weight percent;

(c) trimethylamine hydrochloride;

(d) alcohol to serve as a solvent for said feeding attractant; and

(e) a suitable carrier.

5,008,108

COMPOSITIONS UTILIZING AN EXOCELLULAR POLYSACCHARIDE ISOLATED FROM *ZOOGLOEA RAMIGERA*

ChoKyun Rha, Boston; Pasawadee Pradipasena, Brookline; TetsuHisa Nakamura; Donald D. Easson, Jr., both of Cambridge, and Anthony J. Sinskey, Boston, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 890,864, Jul. 28, 1986, Pat. No. 4,851,393. This application Mar. 28, 1989, Ser. No. 329,593

Int. Cl.[5] A61K *7/00, 7/08, 7/16, 31/715*

U.S. Cl. 424—401 **5 Claims**

1. A physiological lubricant with a pH between 2 and 9 and a salt concentration between 0 and 1.0 M, comprising between approximately 0.001 to 0.3% exocellular polysaccharide produced by *Zoogloea ramigera*, having a purity of greater than about 95% and a chain stiffness parameter of up to about 0.02, wherein the particular and metal ion content, ionic strength, pH and concentration of polysaccharide and composition produce a specific charge density on the polysaccharide to yield an intrinsic viscosity of the polymer in solution of between 10.0 and 20 dl/g as calculated by the Yuan Dougherty-Stivala equation and an intrinsic viscosity of polymer in solution of between 16 and 167 dl/g as calculated by the Fuoss equation, in combination with a physiological lubricant.

4. A pharmaceutical or cosmetic product having a pH between 4 and 9, an ionic strength equivalent to between 0M and 0.2M and comprising between approximately 0.001 and 1.0% exocellular polysaccharide produced by *Zoogloea ramigera*, having a purity of greater than about 95% and a chain stiffness parameter of up to about 0.02, wherein the particular and metal ion content, ionic strength, pH and concentration of polysaccharide and composition produce a specific charge density on the polysaccharide to yield an intrinsic viscosity of the polymer in solution of between 10.0 and 20 dl/g as calculated by the Yuan Dougherty-Stivala equation and an intrinsic viscosity of polymer in solution of between 16 and 167 dl/g as calculated by the Fuoss equation, in combination with a pharmaceutical or cosmetic product selected from the group consisting of skin lotions, skin cleansers, contact lens cleansers, eye drop lubricants, cosmetic gels, cosmetic ointments, makeup, hair gels, hair conditioners, and tooth paste gels.

5,008,109

VESICLE STABILIZATION

George W. Tin, Arcadia, Calif., assignor to Vestar, Inc., San Dimas, Calif.

Continuation of Ser. No. 63,780, Jun. 18, 1987, abandoned, which is a continuation of Ser. No. 815,773, Jan. 2, 1986, abandoned, which is a continuation of Ser. No. 614,255, May 25, 1984, abandoned. This application Oct. 11, 1988, Ser. No. 257,155

Int. Cl.[5] A61F *13/00;* **A61K** *9/127, 47/36, 47/42*

U.S. Cl. 424—422 **12 Claims**

1. A method for the storage and use of small micellular particles, comprising the steps of: suspending said micellular particles in a pharmaceutically acceptable polymeric gel solution to form a suspension with a protective gel surface about said micellular particles; cooling the suspension to form a gel matrix which restricts movement of the particles; and warming the gel matrix to at least about room temperature, thereby transforming the gel matrix into an aqueous suspension suitable for use.

8. The method of claim 1 further comprising injecting the aqueous suspension in vivo after it has been transformed from a gel matrix to an aqueous suspension.

5,008,110

STORAGE-STABLE TRANSDERMAL PATCH

Arnold G. Benecke, Hamilton; Daniel J. Kinne, Cincinnati, and Andrew J. Wnuk, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 10, 1988, Ser. No. 269,513

Int. Cl.[5] A61K *9/00*

U.S. Cl. 424—448 **20 Claims**

1. A storage-stable device for the transferal delivery of an active pharmaceutical, said device comprising:

(a) a drug reservoir containing a mixtured of said pharmaceutical and a skin permeation enhancer, said reservoir having an upper surface and a lower surface;

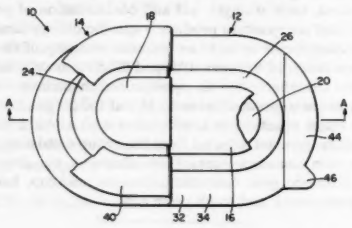
(b) a lower barrier film which is resistant to permeation by and absorption of said pharmaceutical and said skin permeation enhancer in contact with said lower surface of said reservoir;

(c) an upper barrier film which is resistant to permeation by and absorption of said pharmaceutical and said skin permeation enhance in contact with said upper surface of said reservoir;

(d) a compartment containing said drug reservoir and said

lower and said upper barrier films, said compartment comprising a top cover located adjacent and secured to said upper barrier film and a bottom cover located adjacent and secured to said lower barrier film, each of said covers being comprised of a material which is resistant to permeation by moisture, oxygen and light, said top cover and aid bottom cover being hermetically sealed together smear their peripheral edges;

(e) an outermost coverstock attached to said bottom cover of said outer compartment, said coverstock having an adhesive coating thereon, said hermetically-sealed compartment and said upper and lower barrier films together



preventing said mixture of said pharmaceutical and said skin permeation enhancer from coming into contact with said adhesive coating on said outermost coverstock as well as the entry of moisture, oxygen and light from the surrounding environment into said reservoir; and

(f) a release liner attached to said top cover of said compartment, said release liner being in contact with the periphery of said outermost coverstock, whereby peeling said release liner from said coverstock breaks said hermetic seal between said top cover and said bottom cover o said compartment, thereby exposing the adhesive at the periphery of said outermost coverstock and the upper surface of said drug reservoir.

5,008,111

PHYSIOLOGICAL MEANS OF ENHANCING TRANSDERMAL DELIVERY OF DRUGS

Nicholas Bodor, Gainesville, Fla., assignor to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 14,317, Feb. 13, 1987, Pat. No. 4,824,676, which is a continuation-in-part of Ser. No. 659,919, Oct. 11, 1984, abandoned. This application Dec. 14, 1988, Ser. No. 284,032

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—449 **6 Claims**

1. In an improved method of transdermally delivering a pharmaceutically active non-anticholinergic drug from a transdermal delivery system applied to an area of skin to provide transdermal delivery of said active drug through said area of skin, the improvement comprising:

pre-treating said area of skin with an anhidrotic agent in an amount sufficient to have a local antiperspirant effect on the area treated but insufficient o cause a significant systemic effect, whereby the transdermal delivery of said pharmaceutically active drug is enhanced and wherein said anhidrotic agent is an anticholinergic quaternary ammonium salt compound.

5,008,112

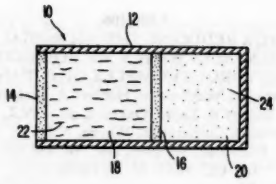
DEVICE FOR THE EXTENDED DELIVERY OF DIFFUSIBLE AGENTS

Randolph B. DePrince, and Ravi Viswanathan, both of Terre Haute, Ind., assignors to International Minerals & Chem. Corporation, Northbrook, Ill.

Filed Dec. 16, 1985, Ser. No. 809,437

Int. Cl.[5] A61K *9/22*

U.S. Cl. 424—468 **38 Claims**



1. A device for the continuous administration to a fluid medium of at least two agents having different rates of diffusion, said agents characterized as an agent having a relatively rapid rate of diffusion and an agent having a relatively slow rate of diffusion, which comprises: a wall, formed at least in part by a porous membrane, the remainder of said wall formed by a material impermeable to said agents and to said fluid medium, which completely surrounds and defines a reservoir, the reservoir comprising:

(a) a compartment which comprises said agent having the relatively slow rate of diffusion, wherein said compartment is partly formed by said porous membrane part of said wall permitting said agents to diffuse, and partly formed by a permeable partition, and

(b) at least one compartment which comprises said agent having the relatively rapid rate of diffusion, wherein said compartment is not in direct contact with said porous membrane part of said wall, said compartment is in contact with the portion of said wall formed by a material impermeable to said agents and to said fluid medium and is separated by said permeable partition from the compartment comprising said agent having the relatively slow rate of diffusion, such that when said device is exposed to said fluid medium, said agents having different rates of diffusion will diffuse through the porous membrane part of said wall at a substantially steady rate for a prolonged period of time.

5,008,113

METHOD FOR PREPARING FILM COATED PHARMACEUTICAL PREPARATIONS AND METHOD FOR IMPROVING PROPERTIES THEREOF

Hiroyasu Kokubo, Joetu; Fujio Sekigawa, Omiya; Tohru Chiba, Joetsu, and Yoshiro Onda, Higashikurume, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 148,000, Jan. 25, 1988, abandoned. This application May 19, 1989, Ser. No. 355,110

Claims priority, application Japan, Jan. 28, 1987, 62-17846; Jan. 28, 1987, 62-17847

Int. Cl.[5] A61K *9/36*

U.S. Cl. 424—480 **5 Claims**

1. A method for providing white colored film coated pharmaceutical preparations, said method comprising the steps of providing pharmaceutical preparations having a film coating material containing moisture, and irradiating said film coating with ultra violet rays to partially oxidize the material to a Yellowness Index in the range of about 5.1 to 9.8, wherein said film coating material comprises at least one member selected from the group consisting of methyl cellulose, hydroxypropylmethyl cellulose, hydroxypropyl cellulose, hydroxypropylmethyl cellulose phthalate, hydroxypropylmethyl cellulose

acetate succinate, carboxymethyl cellulose and cellulose acetate phthalate.

5,008,114

PHARMACEUTICAL COMPOSITIONS WITH CONTROLLED RELEASE, AND A METHOD FOR THEIR PREPARATION

Mara L. Lovrecich, Trieste, Italy, assignor to Vectorpharma International S.p.A., Trieste, Italy

Filed Nov. 28, 1988, Ser. No. 276,489
Claims priority, application Italy, Apr. 8, 1988, 20145 A/88
Int. Cl.[5] A61K 9/14, 9/26
U.S. Cl. 424—484 13 Claims

1. Pharmaceutical compositions comprising a microporous support having pores of an average diameter of between 5 and 150 nm, a surface area of between 30 and 600 m^2/g, and a particle diameter of less than 200 microns, said microporous support being selected from the group consisting of silica, silicates, zeolites, alumina, activated carbon and a microporous polymer, said microporous support having a pharmaceutically active substance selected from the group consisting of antihypertensive, antiinflammatory, antianxiety, antidepressive, corticosteroids and antibacterial medicaments distributed within the support pores in crystalline form, the crystal dimensions being in the nanometer range.

5,008,115

MATRIX FOR RELEASE OF ACTIVE INGREDIENTS

Chi-Long Lee, and Gerald A. Gornowicz, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 184,731, Apr. 22, 1988, Pat. No. 4,908,208. This application Mar. 2, 1990, Ser. No. 487,478
Int. Cl.[5] A01N 25/08; A61L 9/04, 15/46
U.S. Cl. 424—486 7 Claims

1. An improved method for forming active substance delivery reservoir comprising

(A) selecting a polymeric material consisting substantially of a linear thermoplastic block copolymer comprising from 1 to 30 weight percent of hard segments consisting essentially of polyurethane units derived from an organic diisocyanate and an alkylene diol containing from 2 to about 10 carbon atoms, and from 70 to 99 weight percent to soft segments comprising from 15 to 99 percent by weight, based on the weight of said copolymer, of polydiorganosiloxane units, based on the weight of said copolymer, said copolymer having a glass transition temperature between 40° and 160° C., (B) heating said copolymer to a temperature sufficient to soften it, (C) admixing into said softened copolymer an active substance chosen from the group consisting of synthetic perfumes, fragrances, insect repellants, air deodorizers, bactericides, herbicides, plant growth regulators, sex pheromones, and air fresheners, and (D) cooling the resultant composition to harden and form a matrix.

5,008,116

IMMUNOSTIMULATORY MICROSPHERE

Frederick Cahn, 57 Raleigh Rd., Belmont, Mass. 02178

Filed Nov. 14, 1988, Ser. No. 270,276
Int. Cl.[5] A61K 9/16
U.S. Cl. 424—491 11 Claims

1. A macroporous microsphere comprising a particle and an antigenic component, selected from the group consisting of whole inactivated pathogens and submits thereof, RDNA derived polyreptides, recombinant viruses, synthesized polypeptides and anti-idiotypes, and whole microorganisms or animal cells wherein said antigenic component is physically entrapped in or chemically crosslinked, to the interior of said particle, said particle being comprised of a polymer, and said microsphere having size of 1 to 1000 μm, and pores with a mean pore diameter of 0.1 to 100 μm.

5,008,117

FORMULATION FOR PREPARING EXTEMPORANEOUS HOMOGENEOUS MICROCAPSULE SUSPENSION

Massimo Calanchi, Monza; Leonardo Gentilini, Milano, and Marco Marconi, Cinisello Balsamo, all of Italy, assignors to Eurand Italia SPA, Milano, Italy

Continuation-in-part of Ser. No. 2,660, Nov. 26, 1986, abandoned. This application Dec. 20, 1988, Ser. No. 287,401
Claims priority, application Italy, May 2, 1986, European Pat. Off. 8600280
Int. Cl.[5] A61K 9/16, 9/50, 9/62; B01J 13/02
U.S. Cl. 424—494 22 Claims

1. Method of preparing a drug microcapsule formulation consisting essentially of the drug microcapsules and a thickening or suspending agent and a binder and a solid particulate excipient, having the property of being readily dispersible and readily dissolvable in water or aqueous vehicles without clot formation so as to place the drug microcapsules in homogeneous suspension, consisting essentially of the following steps:

(a) providing a thickening or suspending agent having a grain size less than 100 mesh (Tyler) which is insoluble or only slightly soluble in a solvent in which a binder is dissolved in step (b);

(b) suspending the suspending or thickening agent in a dilute organic solvent solution of a solvent-soluble and water-soluble binder; wherein the weight of thickening or suspending agent in relation to the binder is about 4:1 to about 20:1;

(c) coating the suspension around particles of a water-soluble solid sweetener;

(d) drying to evaporate solvent and sieving the obtained product; and

(e) mixing the said product with drug microcapsules having a water-insoluble membrane-coating to provide the desired readily-dispersible formulation.

11. A dry formulation for preparing a homogeneous suspension of drug microcapsules, when it is poured into water or an aqueous base liquid, consisting essentially of (A) drug microcapsules having a polymeric membrane coating which is permeable by gastrointestinal juices, admixed with (B) coated particles consisting essentially of (a), (b), and (c), (a) being a solvent-soluble and water-soluble binder; and (b) being a thickening or suspending agent having a grain size less than 100 mesh (Tyler) which is insoluble or only slightly soluble in a dilute organic solvent solution in which the binder is soluble; the weight of thickening or suspending agent in relation to the weight of the binder being about 4:1 to about 20:1; a suspension of (a) and (b) being coated around (c), (c) being particles of a water-soluble solid sweetener; the admixture being sieved to a particle size of 870 microns or less.

5,008,118

METHOD FOR PRODUCING ORGANIC AGENT COATED WITH POWDERS OF COATING AGENT

Koichi Iwanami, Yokohama, and Masatsugu Ito, Tokyo, both of Japan, assignors to Nippon Oil and Fats, Tokyo, Japan

Filed Jun. 17, 1988, Ser. No. 208,996
Claims priority, application Japan, Jun. 23, 1987, 62-154398
Int. Cl.[5] A61K 9/16
U.S. Cl. 424—498 14 Claims

1. A method for producing a coated organic agent comprising contacting a coating agent with core powders of an organic substance at a temperature less than the melting temperature of either the coating agent or core powder, so that said coating agent collides against said core powders with sufficient resultant frictional heating to cause adhesive binding of the coating agent of the core powder, said coating agent containing at least lipid powders having a melting point not lower than 40° C., and attaching said coating agent onto the overall surface of each of said core powders, whereby said core powders are coated by said coating agent, wherein said core powders of said organic substance are selected from the group consisting of powders of organic acids, powders of salts of organic acids,

powders of water-soluble vitamins and/or salts and/or esters thereof, powders of amino acids and/or salts and/or esters thereof and mixtures thereof, wherein said organic acids are selected from the group consisting of sorbic acid, propionic acid, fumaric acid, maleic acid, dehydroacetic acid, benzoic acid, citric acid, malic acid, succinic acid, tartaric acid, oxalic acid, L-ascorbic acid, lactic acid, acetic acid, butyric acid, adipic acid, tannic acid, gallic acid, phytic acid and mixtures thereof,

wherein said salts of organic acids are selected from the group consisting of sodium, calcium potassium, magnesium, iron, copper and zinc salts and mixtures thereof of organic acids selected from the group consisting of sorbic acid, propionic acid, fumaric acid, maleic acid, dehydroacetic acid, benzoic acid, citric acid, malic acid, succinic acid, tartaric acid, oxalic acid, L-ascorbic acid, lactic acid, acetic acid, butyric acid, adipic acid, tannic acid, gallic acid, phytic acid and mixtures thereof,

wherein said water-soluble vitamins and/or salts and/or esters thereof are selected from the group consisting of vitamin B_1, vitamin B_2, vitamin B_6, vitamin B_{12}, vitamin B_{13}, vitamin B_{14}, vitamin B_{15}, lipoic acid, nicotinic acid, nicotinamide, pantothenic acid, folic acid, p-aminobenzoic acid, biotin, choline, inositol, vitamin L, vitamin U, vitamin C, vitamin P, calcium salts of said vitamins, sodium salts of said vitamins, potassium salts of said vitamins, magnesium salts of said vitamins, iron salts of said vitamins, copper salts of said vitamins, zinc salts of said vitamins, hydrochlorates of said vitamins, nitrates of said vitamins, esters of phosphoric acid with said vitamins, esters of acetic acid with said vitamins, esters of succinic acid with said vitamins, esters of maleic acid with said vitamins, esters of glutamic acid with said vitamins, and mixtures thereof,

wherein said esters of said water-soluble vitamins are selected from the group consisting of esters of phosphoric acid, acetic acid, succinic acid, maleic acid and glutamic acid and mixtures thereof of oil-soluble vitamins selected from the group consisting of vitamin A, vitamin D, vitamin E, vitamin K and mixtures thereof, and

wherein said amino acids and/or salts and/or esters thereof are selected from the group consisting of DL-alanine, L-valine, leucine, L-isoleucine, L-phenylalanine, tyrosine, diiodetyrosine, DL-threonine, L-threonine, DL-tryptophan, L-tryptophan, serine, proline, hydroxyproline, thyroxine, DL-methionine, L-methionine, cystine, cysteine, aspartic acid, L-glutamic acid, asparagine, glutamine, D-lysine, L-lysine, hydroxylysine, arginine, histidine, β-alanine, β-aminobutyric acid, γ-aminobutyric acid, δ-amino-n-valeric acid, calcium salts of said amino acids, sodium salts of said amino acids, potassium salts of said amino acids, magnesium salts of said amino acids, iron salts of said amino acids, copper salts of said amino acids, zinc salts of said amino acids, hydrochlorates of said amino acids, nitrates of said amino acids, esters of phosphoric acid with said amino acids, esters of acetic acid with said amino acids, and mixtures thereof.

5,008,119

METHOD OF USING MANGANESE TO PROTECT AN ANIMAL FROM RADIATION DAMAGE

Junko Matsubara, c/o Department of Epidemiology, School of Medicine, University of Tokyo, No. 3-1, Hongo 7-chome, Bunkyo-Ku, Tokyo 113, Japan

PCT No. PCT/JP86/00510, § 371 Date Aug. 10, 1987, § 102(e) Date Aug. 10, 1987, PCT Pub. No. WO87/02245, PCT Pub. Date Apr. 23, 1987

PCT Filed Oct. 6, 1986, Ser. No. 62,180

Claims priority, application Japan, Oct. 14, 1985, 60-228536; Oct. 6, 1986, 61-236255

Int. Cl.[5] A61K *33/32*

U.S. Cl. 424—639 **4 Claims**

1. A method of protecting a host from radiation damage, comprising administering to a host in need thereof an effective radiation damage protecting amount of a water-soluble manganese salt in an amount effective to increase the liver metallothionein level in the host by at least fivefold within about one day following the administration.

5,008,120

METHOD OF PREPARING IRON-FORTIFIED BEVERAGE

Maki Tanaka; Teiichi Tojima; Shun-ichi Dousako, and Kiyoshi Tatsumi, all of Saitama, Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Filed Jul. 12, 1990, Ser. No. 551,922

Claims priority, application Japan, Jul. 21, 1989, 1-189563; Apr. 26, 1990, 2-110953

Int. Cl.[5] A23L *1/304*

U.S. Cl. 426—74 **4 Claims**

1. A method of preparing an iron-fortified beverage containing lactoferrin capable of binding iron, comprising adjusting either an aqueous solution containing lactoferrin, iron preparation and sodium bicarbonate, or aqueous solution of iron lactoferrin to a desired ionic strength (I) sterilizing said iron lactoferrin by heat, cooling mixing said iron lactoferrin solution with a solution of beverage ingredients which has been also sterilized by heat and cooled wherein said desired ionic strength is determined by the following formula:

$$\log I \leqq -T/66.7 - 0.1$$

(wherein $60 \leqq T \leqq 80$)

$$\log I \leqq -1.3$$

($T \geqq 80$)

(T indicates temperature of sterilization in degrees Celsius.)

5,008,121

STORAGE STABLE, READILY RECONSTITUTED COMESTIBLE

Donald B. Bernacchi; Robert J. Loewe, both of Chicago, and Donna L. Immel, Green Oaks, all of Ill., assignors to Griffith Laboratories Worldwide, Inc., Alsip, Ill.

Continuation of Ser. No. 232,910, Aug. 16, 1988, which is a continuation-in-part of Ser. No. 941,690, Dec. 15, 1986, Pat. No. 4,764,386, which is a continuation-in-part of Ser. No. 779,657, Sep. 24, 1985, Pat. No. 4,744,994. This application Oct. 3, 1989, Ser. No. 416,601

Int. Cl.[5] A23P *1/08*

U.S. Cl. 426—89 **1 Claim**

1. A storage stable comestible comprising:

a comestible chosen from the group consisting of poultry, fish, red meats, egg products, vegetables, cheeses, fruits and fabricated foods having a generally continuous gelatinized starch membrane around the comestible.

5,008,122

PROCESS AND APPARATUS FOR CONTINUOUSLY REMOVING CONTAMINATES FROM EDIBLE COOKING OIL

Ellen M. Rosnack, Virginia Beach; Larry A. Pray, Suffolk; Alger C. Marable, Virginia Beach, and Gerry C. Zekert, Suffolk, all of Va., assignors to Nabisco Brands, Inc., East Hanover, N.J.

Filed Jun. 10, 1988, Ser. No. 205,215

Int. Cl.[5] A23D *5/04*

U.S. Cl. 426—417 **15 Claims**

1. A process for continuously removing contaminates from edible oil in a cooking bath having a temperature in excess of 250° F. comprising:

withdrawing a continuous stream comprising oil and contaminates from said bath;

providing a continuous stream comprising substantially clean liquid solvent for at least a portion of said contami-

nates, said solvent having a specific gravity different than the specific gravity of said solvent consisting essentially of tap water without substantial added acid;

mixing said oil and solvent streams in a volume flow ratio between about 1% and 40% solvent to form a mixture having a temperature in excess of about 200° F. to provide for enhanced solubility of said contaminates in said solvent and to transfer at least a portion of said contaminates from said oil to said solvent under a pressure sufficient to substantially inhibit vaporization of said liquid solvent;

separating said oil and solvent mixture by specific gravity into a stream comprising cleaned oil and a stream comprising solvent and contaminates;

returning said cleaned oil stream to said bath; and

disposing of said stream comprising solvent and contaminates.

5,008,123

FOOD PROCESSING METHOD

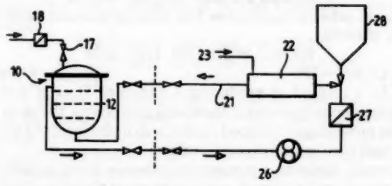
David R. Bewley, Middlesex, Great Britain; Christopher J. B. Brimelow, New Milford, Conn., and Kenneth W. Wright, Twyford, Great Britain, assignors to Nestec S.A., Vevey, Switzerland

Filed Jun. 4, 1990, Ser. No. 532,371

Claims priority, application United Kingdom, Jun. 15, 1989, 8913738

Int. Cl.[5] A23L *1/00*

U.S. Cl. 426—509 **13 Claims**



1. A method for processing meat comprising introducing meat into a mobile cooking vessel, sealing the meat-containing vessel from the atmosphere, heating a stock liquor with a heat exchanger to a cooking temperature of at least 60° C. and circulating the heated stock liquor through the vessel and the heat exchanger for a period of time sufficient to heat the meat to a cooking temperature and to cook the meat, and after cooking the meat, cooling the circulating stock liquor with the heat exchanger to a temperature suitable to cool the cooked meat to a temperature of no more than 15° C. within 45 minutes.

5,008,124

DRY MIX FOR PREPARATION OF IN-SITU SAUCE FOR FOODSTUFFS

Mildred N. Wilson, Wilton, Conn., assignor to Nabisco Brands, Inc., East Hanover, N.J.

Continuation of Ser. No. 222,719, Jul. 21, 1988, abandoned. This application Dec. 4, 1989, Ser. No. 445,915

Int. Cl.[5] A23L *1/522, 1/54*

U.S. Cl. 426—589 **5 Claims**

1. A dry mix preparation suitable for application to uncooked or partially cooked meat as either a dry mix or a liquefied dry mix, and which develops into a thickened sauce for the meat during the meat cooking process, said dry mix comprising xanthan gum, in an amount which will provide from about 0.003 to about 0.005 grams/ml. of xanthan gum based upon dissolution of the mix in one cup of water, and an ungelatinized food-grade starch, in an amount which will provide from about 0.01 to about 0.02 grams/ml. of said starch based upon dissolution of the mix in one cup of water, and further comprising flavorants and additional ingredients necessary to provide the particular type of sauce desired and such that an aqueous solution of said dry mix has a pH of from about 3.0 to about 4.5

5,008,125

SOLUBLE COFFEE WITH AROMA RECOVERED FROM THE THERMAL HYDROLYSIS OF SPENT GROUNDS

Kenneth W. Cale, Marlboro, N.J.; Naoto Imura, Yokkaichi, Japan; George A. Jasovsky, Bayonne, N.J., and Saul N. Katz, Monsey, N.Y., assignors to Kraft General Foods, Inc., Glenview, Ill.

Division of Ser. No. 339,290, Apr. 17, 1989, Pat. No. 4,900,575. This application Sep. 26, 1989, Ser. No. 412,372

Int. Cl.[5] A23F *5/48*

U.S. Cl. 426—594 **3 Claims**

1. A soluble coffee aromatized with a collected fraction of beneficial natural aromas and flavors released from the thermal hydrolysis of partially extracted roasted and ground coffee, said partially roasted and ground coffee having been subjected to atmospheric extraction to extract a majority of the arabinogalactan therefrom, which comprises:

25 to 125 ppm acetaldehyde, 10 to 40 ppm diacetyl, greater than 175 ppm total aromatics, a ratio of (acetaldehyde+-diacetyl)/3-methyl butanol of 1.75 to 10 and a ratio of acetaldehyde/3-methyl butanol of 1.5 to 10.

5,008,126

LONG CHAIN DIOL DIESTERS AS LOW CALORIE FAT MIMETICS

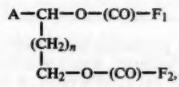
Lawrence P. Klemann, Somerville; John W. Finley, Whippany, and Anthony Scimone, Cedar Grove, all of N.J., assignors to Nabisco Brands, Inc., East Hanover, N.J.

Filed Jun. 27, 1989, Ser. No. 372,056

Int. Cl.[5] A23D *7/00*

U.S. Cl. 426—611 **54 Claims**

1. An edible composition comprising, in addition to other edible materials, an edible fat mimetic compound of the formula



where

A is an aliphatic chain having 7 to 28 carbon atoms,

n=0 to 2, and

F_1 and F_2 are aliphatic groups having 1 to 30 carbon atoms.

5,008,127

PROCESS FOR THE PRODUCTION OF A HIGHLY-ORIENTATED ULTRALONG CONJUGATED POLYMER

Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 22, 1990, Ser. No. 482,965

Claims priority, application Japan, Feb. 27, 1989, 1-045993; Feb. 27, 1989, 1-45994; Feb. 27, 1989, 1-45995; Feb. 27, 1989, 1-45996

Int. Cl.[5] B05D *3/06*

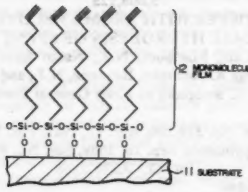
U.S. Cl. 427—36 **34 Claims**

1. A process for the production of a highly-orientated ultralong conjugated polymer, which comprises:

a step of immersing a substrate having a hydrophilic surface in a nonaqueous organic solvent containing a compound having at least an unsaturated group, such as an acetylenic group (—C≡C—), etc., and a group represented by the formula (—SiA_xH_{3-x}) in which A denotes a chloro or lower alkyl group and x is an integer of from 1 to 3, whereby forming a monomolecular film of the above compound on the substrate by chemisorption,

a step of selectively and linearly inactivating unsaturated

groups of the monomolecular film by means of writing with STM (scanning tunneling microscope), exposure to electron beam or exposure to X-ray, and



a step of irradiating the entire surface of the substrate with radiation in an inert gas atmosphere to polymerize that remaining portion of the monomolecular film which has not been inactivated.

5,008,128

PROCESS FOR PRODUCING INFORMATION RECORDING MEDIUM

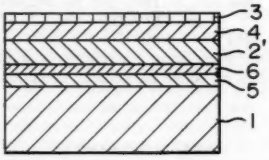
Takanori Kudo, Hachioji, and Heigo Ishihara, Tokyo, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 31, 1989, Ser. No. 304,086

Claims priority, application Japan, Feb. 3, 1988, 63-21956; Jul. 18, 1988, 63-177156

Int. Cl.[5] H01F *10/02*

U.S. Cl. 427—130 **10 Claims**



1. A process for producing an information recording medium comprising a substrate, a magnetic layer formed on the substrate and a lubricant layer formed on the magnetic layer, which comprises forming the lubricant layer by applying a fluorine-containing isocyanate derivative, whose isocyano group is protected, to the magnetic layer, then reproducing the isocyano group and subjecting the reproduced isocyano group to polymerization, thereby forming a fluorine-containing isocyanate polymer layer.

5,008,129

METHODS OF FABRICATING OPTICAL RECORDS WITH OVERCOATING

Norman L. Boling; Thomas Mayer, and James D. Rancourt, all of Santa Rosa, Calif., assignors to Unisys Corp., Detroit, Mich.

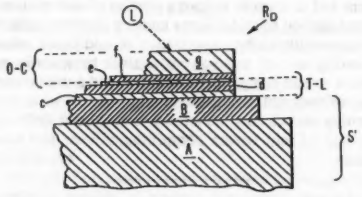
Division of Ser. No. 450,804, Dec. 17, 1982. This application Jan. 14, 1985, Ser. No. 691,047

Int. Cl.[5] B05D *5/00;* **G03C** *1/76*

U.S. Cl. 427—160 **10 Claims**

1. In a method for fabricating a radiation recording unit, the steps of:

depositing a radiation-sensitive record layer of metallic absorber material on a smooth optical disk substrate for recording digital data, this layer being adapted to be activated by a prescribed radiation beam to a prescribed recorded transition state at prescribed bit sites thereon; said transition state involving at least some minor deformation and/or minor translation of the record layer material at each bit site; applying buffer supercoat means upon this layer, or upon thin film means thereon, this supercoat means being adapted to isolate this layer and comprising a buffer layer of relatively soft yielding material, selected and applied so as to enhance the recording-sensitivity of the record layer while so protecting it; said buffer material being selected to be highly transparent to said beam and adapted to be relatively weakly-bonded to said record



layer such as to accommodate said deformation and/or translation, presenting little or no resistance thereto; and then applying a relatively hard protective outer-seal coating over the "soft" buffer layer, relatively strongly bonded thereto.

5,008,130

METHOD OF PRODUCING A PATTERNED FLOCKED WEB OF MATERIAL

Gerhard F. Lenards, Mönchengladbach, Fed. Rep. of Germany, assignor to Uniroyal Textilcord, S.A., Steinfort

Filed Jun. 22, 1989, Ser. No. 369,775

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1988, 3820992

Int. Cl.[5] B05D *5/00, 1/16, 1/36*

U.S. Cl. 427—206 **6 Claims**

1. In a method of producing a patterned flocked web of material, the improvement therewith comprising the steps of:

first providing a patterned carrier web in the form of a textile web that has a patterned surface;

secondly applying a transparent adhesive layer to said patterned surface in such a way as to cover the same although allowing the patterned surface to appear through the transparent adhesive layer;

then covering said transparent adhesive layer with light, single-color flock to a predetermined extent;

thereupon drying and fixing the resulting arrangement; and

finally removing excess flock so that the pattern of the web stands out from the background in a muted and softened manner.

5,008,131

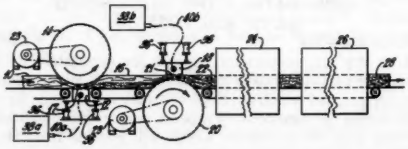
METHOD AND APPARATUS FOR IMPREGNATING A POROUS SUBSTRATE WITH FOAM

Shiv K. Bakhshi, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 14, 1982, Ser. No. 388,283

Int. Cl.[5] B05D *1/26, 3/06;* **B05C** *3/00, 3/18*

U.S. Cl. 427—209 **29 Claims**



1. Apparatus for impregnating a porous substrate with a foam comprising a foam discharge head having a surface plate adapted with one or more discharge openings for the discharge of foam therefrom, a foraminous surface positioned opposite said discharge openings to define a nip region having a thick-

ness less than the thickness of the porous substrate so that the porous substrate is urged into sealed relation with said surface plate so that foam is substantially prevented from accumulating at the interface of said surface plate and the porous substrate as the porous substrate is transported through said nip region, a surface support conveyor positioned between said foraminous surface and the porous substrate, means for driving said foraminous surface to transport the porous substrate through said nip region, and means for supplying foam to said foam discharge head with pressure sufficient to impregnate the porous substrate.

13. A method for impregnating a porous substrate with a foam comprising transporting the porous substrate through a nip region defined by a foraminous surface and a foam discharge head, said foam discharge head comprising a surface plate having one or more discharge openings, where the transport of the porous substrate through said nip region compresses the porous substrate, thereby pressing the porous substrate into sealed relation with said surface plate to substantially prevent foam from accumulating at the interface between said surface plate and the porous substrate as the porous substrate is transported through said nip region, providing a surface support conveyor positioned between said foraminous surface and the porous substrate, and supplying foam to said discharge head with pressure sufficient to impregnate the porous substrate.

5,008,132

PROCESS FOR PREPARING TITANIUM NITRIDE COATED SILICON CARBIDE MATERIALS

Shih-Yee Kuo; Hyun-Sam Cho, and Jeffrey D. Bright, all of Salt Lake City, Utah, assignors to Norton Company, Worcester, Mass.

Filed Jun. 6, 1989, Ser. No. 362,188

Int. Cl.[5] C23C *16/08, 16/14, 16/56, 8/24*

U.S. Cl. 427—217 **12 Claims**

1. A process of coating silicon carbide materials selected from the group consisting of individual particles having an average particle size of about 0.5 to about 1000 microns, whiskers, and fibers with titanium nitride which comprises the steps of (i) placing a coating having a low diffusivity for carbon atop the silicon carbide materials, (ii) placing a titanium metal coating atop the low diffusivity coating, and (iii) nitriding the titanium metal to form titanium nitride.

5,008,133

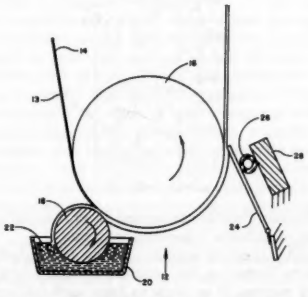
METHOD OF COATING A WEB WITH A COATING MIXTURE INCLUDING MICROCAPSULES CRUSHED BY A BACK-UP MEMBER

Albert J. Herbet, 6 E. Spring, Oxford, Ohio 45056; Ronald L. Hart, 1650 E. Slater Ct., Xenia, Ohio 45385-9525, and Dale E. Work, 115 N. Madison Rd., London, Ohio 43140

Filed Jun. 6, 1990, Ser. No. 534,033

Int. Cl.[5] B05D *3/12*

U.S. Cl. 427—333 **6 Claims**



1. A method of forming a coating on a web which comprises forming a coating mixture including a continuous phase of a first material and a second material contained in microcapsules, the first material and the second material being adapted to interact to form the coating, applying the coating mixture to a face of the web, and passing the web between a back-up member and a doctor blade so that the doctor blade levels the coating on the web and crushes the microcapsules to cause mixing of the materials on the web.

5,008,134

ELECTROCONDUCTIVE COATING COMPOSITION

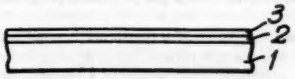
Kelvin P. Adkins, Elmstead Market, England, assignor to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 400,794, Aug. 30, 1989, Pat. No. 4,957,816, which is a division of Ser. No. 69,701, Jun. 30, 1987, Pat. No. 4,879,064. This application Jul. 19, 1990, Ser. No. 554,426

Claims priority, application United Kingdom, Jul. 2, 1986, 8616186

Int. Cl.[5] B05D *3/02;* **B32B** *27/36, 27/38*

U.S. Cl. 427—386 **2 Claims**



1. A method of producing a coated article comprising applying to at least one surface of a polymeric substrate a coating composition comprising a polymeric electrolyte and a polyepoxy resin in a weight ratio from 1:20 to 1:0.5, the polymeric electrolyte being a cationic electroconductive polymer capable of conducting a current through ionization.

5,008,135

EPOXY FLUOROCARBON COATING COMPOSITIONS AND THE PROCESS TO MAKE THE SAME

Paul J. Giordano, Hudson, and Richard C. Smierciak, Streetsboro, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 334,736, Apr. 7, 1989, abandoned, which is a continuation of Ser. No. 186,673, Apr. 21, 1988, abandoned, which is a continuation of Ser. No. 856,625, Apr. 25, 1986, abandoned, which is a continuation-in-part of Ser. No. 777,890, Sep. 19, 1985, abandoned. This application Jul. 18, 1990, Ser. No. 554,933

Int. Cl.[5] C08L *63/00, 27/18*

U.S. Cl. 427—386 **31 Claims**

1. A fluid coating composition comprising about 5 to about 24 percent by weight of a powdered fluorocarbon polymer wherein said florocarbon is non-melt processable and wherein said fluorocarbon has a particle size of less than 500 microns, dispersed in about 95 percent to about 70 percent by weight of an epoxy resin and an effective amount of a fluorosurfactant.

5,008,136

TEMPERATURE INDICATING PAINT AND METHOD OF PREPARING A SPECIMEN WITH THE SAME

John R. Chamberlain, Bristol, England, assignor to Rolls Royce plc, London, England

Continuation-in-part of Ser. No. 189,758, May 3, 1988, abandoned. This application Aug. 17, 1989, Ser. No. 395,360

Claims priority, application United Kingdom, May 19, 1987, 8711815

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—388.1 **20 Claims**

19. A method of preparing a part of a gas turbine engine with a temperature indicating paint comprising the steps of applying to the part a temperature indicating paint comprising a silver containing paste dispersed in 10% to 70% by weight of a volatile solvent, the paste comprising:

(a) 50–60% by weight of a metal particle pigment, at least a proportion of which is silver,

(b) 10–12% by weight of a chemically stable glass frit binder that is essentially non-volatile to a temperature of at least 1100° C., and

(c) an organic binder, being the remainder of the paste, volatile at a temperature less than 750° C., permitting the solvent to volatile, and stoving the part for up to five minutes at a temperature of between 750° C. and 850° C. so as to burn off the organic binder.

5,008,137

BARRIER COATINGS

Richard M. Nugent, Jr.; Ken W. Niederst, both of Allison Park, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 152,176, Feb. 4, 1988, abandoned. This application Jun. 19, 1989, Ser. No. 367,992

Int. Cl.[5] B65D *25/00*; B32B *27/08*

U.S. Cl. 428—35.4 **26 Claims**

1. A multilayer packaging material comprising:

(a) at least one layer of a gas-permeable polymeric material; and

(b) at least one layer of a thermoset barrier material comprised of a reaction product of: (i) an ungelled amine-functional polymeric resin which is a reaction product of a polyamine and a polyepoxide, the polyamine and the polyepoxide present in the reaction mixture at a ratio of from about 1.4:1 to about 0.83:1 based upon moles of polyamine to moles of polyepoxide, the ungelled polymeric resin further containing an average of greater than two polyamine moieties per molecule within said resin; and (ii) a material selected from the group consisting of a polyepoxide, a polyoxalate and mixtures thereof, the polymeric barrier material further characterized as containing at least about seven percent by weight amine nitrogen based on the total weight of polymeric barrier material and having an oxygen permeability of less than about 3 cc-mil/100 in^2-day-atmosphere and a carbon dioxide permeability of less than about 15 cc-mil/100 in^2-day-atmosphere at 23° C. and zero percent relative humidity.

5,008,138

PLATEN ROLLER

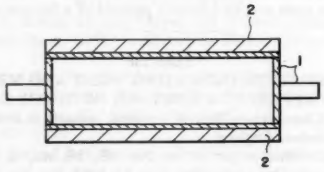
Jun Murata, Kawagoe, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 55,058, May 28, 1987, abandoned. This application Jun. 19, 1989, Ser. No. 368,936

Claims priority, application Japan, Jun. 5, 1986, 61-129291

Int. Cl.[5] B41J *11/057*

U.S. Cl. 428—36.4 **5 Claims**



1. An impact typewriter comprising a platen roller, comprising:

a cylindrical rubber member having a glass transition temperature within the range of −10° C., with said cylindrical member being formed from a rubber material synthesized by using a polymer, carbon, an inorganic filler, an oil, sulfur, a vulcanization aid, a vulcanization accelerator and stearic acid as starting materials; and

support means for supporting said cylindrical rubber member, wherein said rubber member is mounted around said support means.

5,008,139

PRESSURE-SENSITIVE ADHESIVE LAYER

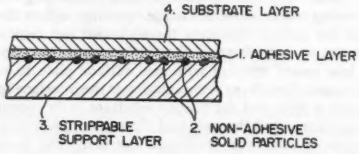
Katsura Ochi; Yasuaki Oonishi, and Kazuhisa Kinsen, all of Uozu, Japan, assignors to Nippon Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1988, Ser. No. 264,784

Claims priority, application Japan, Oct. 31, 1987, 62-274640

Int. Cl.[5] B32B *5/16, 7/06, 7/12*

U.S. Cl. 428—40 **4 Claims**



1. A pressure-sensitive adhesive sheet structure comprising

(A) a pressure-sensitive adhesive layer having, on at least one surface thereof, a layer of evenly dispersed non-adhesive solid particles having an average particle diameter of 10 to 60 microns, wherein at least about half of the solid particles project from the surface of the adhesive layer to a height corresponding to at least about one-fourth of the average particle diameter of the solid particles, and if the solid particles are hollow particles, the walls of the hollow particles are not rupturable by the pressure of bonding,

(B) a strippable support layer contacting the projecting portions of the non-adhesive solid particles on the surface of the adhesive layer and having depressions on the surface intimately receiving the projecting portions of the solid particles, and

(C) a substrate layer laminated to that surface of the pressure-sensitive adhesive layer which does not have the layer of the dispersed solid particles.

5,008,140

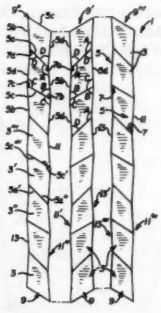
BIAXIALLY CORRUGATED FLEXIBLE SHEET MATERIAL

John C. Schmertz, 5308 Ellsworth Ave., Pittsburgh, Pa. 15232

Filed Jun. 1, 1989, Ser. No. 359,540

Int. Cl.[5] B32B *3/28*

U.S. Cl. 428—179 **4 Claims**



1. A biaxially flexible corrugated sheet material comprising a plurality of identical trapezium segments,

each said trapezium segment having four edges and four corners formed at the juncture of said edges, two said edges meeting at an angle to form each said corner;

said trapezium segments being arranged in a plurality of

elongated strips, each said strip being a single trapezium segment wide and having first and second opposed sides formed by the free edges of said trapezium segments in said strip;

adjacent said strips being mirror images of each other and being connected to each other along their adjoining sides so that the edges of adjacent said trapezium segments meet and four said corners of four adjacent trapezium segments meet at a point, the sum of the angles of said four corners at each said point being alternately less than 360° and greater than 360° along the length of said adjacent strips;

whereby said sheet material has an undulating configuration of alternating ridges and valleys, is inherently curved, and cannot lie in a flat plane.

5,008,141

CUSHIONING MATERIAL FOR MATTRESSES

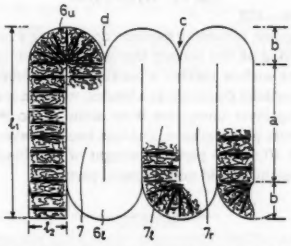
Tokihito Shinozuka, Tokyo, Japan, assignor to Paramount Bed Co., Ltd., Tokyo, Japan

Filed May 16, 1989, Ser. No. 353,329

Claims priority, application Japan, May 27, 1988, 63-129710

Int. Cl.[5] B32B *3/28, 5/06;* **A47C** *27/00*

U.S. Cl. 428—182 **6 Claims**



1. A cushioning material for mattresses, comprising:

a corrugated web having opposite cushioning surfaces, said corrugated web comprising means for providing a relatively soft portion at said opposite cushioning surfaces and a moderately rigid portion between said opposite cushioning surfaces, said means for providing composed of an elongated flat board continuously and alternately bent to form a plurality of consecutive side-by-side contact portions and a plurality of bent portions interconnecting said plurality of side-by-side contact portions, wherein said corrugated web extends substantially in a plane and said plurality of consecutive side-by-side contact portions extend substantially perpendicular relative to said plane, and wherein said elongated flat board is composed of a pile of crimped fibers and said flat board has a plurality of needle punctures therein, extending in a thickness direction of said flat board substantially perpendicular to the direction of elongation of said elongated flat board, formed by needling said pile of crimped fibers, such that said bent portions are relatively soft in a direction generally perpendicular to said plane of said corrugated web and said side-by-side contact portions are moderately rigid relative to said bent portions in said direction generally perpendicular to said plane of said corrugated web; and

holding means for holding said corrugated web together so as to maintain the shape of said corrugated web.

4. A cushioning material for mattresses, comprising:

a corrugated web having opposite cushioning surfaces, said corrugated web comprising means for providing a relatively soft portion at said opposite cushioning surfaces and a moderately rigid portion between said opposite cushioning surfaces, said means for providing composed of an elongated flat board continuously and alternately bent to form a plurality of consecutive side-by-side contact portions and a plurality of bent portions interconnecting said plurality of side-by-side contact portions, wherein said corrugated web extends substantially in a plane and said plurality of consecutive side-by-side contact portions extend obliquely relative to said plane, and wherein said elongated flat board is composed of a pile of crimped fibers and said flat board has a plurality of needle punctures therein, extending in a thickness direction of said flat board substantially perpendicular to the direction of elongation of said elongated flat board, formed by needling said pile of crimped fibers, such that said bent portions are relatively soft in a direction generally perpendicular to said plane of said corrugated web and said side-by-side contact portions are moderately rigid relative to said bent portions in said direction generally perpendicular to said plane of said corrugated web; and

holding means for holding said corrugated web together so as to maintain the shape of said corrugated web.

5,008,142

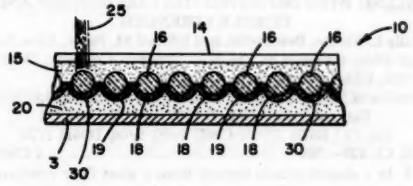
EMBEDDED LENS RETROREFLECTIVE SHEETING WITH FLEXIBLE, DIMENSIONALLY STABLE COATING

Bruce B. Wilson, Mounds View, and Raymond E. Grunzinger, New Scandia Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 2, 1988, Ser. No. 239,950

Int. Cl.[5] G02B *5/128;* **B05D** *5/06*

U.S. Cl. 428—203 **3 Claims**



1. An embedded lens retroeflective sheeting comprising a resin matrix layer in which is partially embedded a plurality of bead lenses, a spacecoat comprising a light transmissive, polymeric layer on the side of the lenses not embedded in the resin matrix layer, and a reflective surface on the side of the spacecoat opposite the lenses; said spacecoat comprising a semi-interpenetrating polymer network which comprises:

(a) a cross-linked reactive polymer component

(b) a cross-linking agent which is at least di-functional with respect to reaction with reactive polymer component; and

(c) a non-reactive polymer component having a weight average molecular weight of between about 7,000 and 30,000, and at least 40% of which can be extracted by solvent from said spacecoat.

5,008,143

DECORATIVE OBJECTS WITH MULTI-COLOR EFFECTS

Louis Armanini, Pleasantville, N.Y., assignor to The Mearl Corporation, Ossining, N.Y.

Continuation of Ser. No. 70,022, Jul. 6, 1987, abandoned. This application Dec. 7, 1989, Ser. No. 453,385

Int. Cl.[5] C09D *5/29*

U.S. Cl. 428—207 **10 Claims**

1. An article exhibiting a multicolor effect consisting essentially of a transparent body, an interference pigment and an absorption colorant in which said absorption colorant is of a color which is different from the reflection color of the interference pigment or the complement thereof and in which the interference pigment and absorption colorant have the same order of magnitude of color intensity.

5,008,144

OVERPRINT AQUEOUS VARNISH

Timothy J. Baker, Claremore, and John H. Woods, Tulsa, both of Okla., assignors to Petrolite Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 267,064, Nov. 4, 1988, Pat. No. 4,908,063. This application Nov. 28, 1989, Ser. No. 442,890

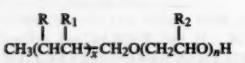
Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—211 18 Claims

1. A product bearing print ink indicia protected by an overprint aqueous varnish having formulation enhancing additive comprising a mixture of

a. A finely divided mostly linear aliphatic hydrocarbon and/or modified hydrocarbon having a molecular weight of about 300–3,000; and

b. a compound represented by the formula:



wherein R and R_1 are independently hydrogen or C_1–C_{10} alkyls; R_2 is hydrogen or methyl, x is about 8 to about 75; and n is about 2 to about 65.

5,008,145

GLASS FIBER REINFORCED POLY(VINYL CHLORIDE) BLEND WITH IMPROVED HEAT DISTORTION AND TENSILE STRENGTH

Philip L. Kinson, Brecksville, and Edward M. Faber, Avon, both of Ohio, assignors to The B.F. Goodrich Company, Brecksville, Ohio

Division of Ser. No. 112,793, Oct. 23, 1987, Pat. No. 4,870,126. This application Sep. 7, 1989, Ser. No. 404,011

Int. Cl.[5] B32B *27/00*; C08K *9/00, 9/06*; D04H *1/58*

U.S. Cl. 428—288 4 Claims

1. In a shaped article formed from a glass fiber reinforced composite of a stabilized blend of poly(vinyl chloride) and a copolymer blended therewith, the improvement consisting essentially of

(a) from about 60 parts to about 85 parts by wt of poly(vinyl chloride) resin per 100 parts of said blend in which the vinyl chloride portion of each repeating unit contains from about 57% to about 67% by wt of chlorine,

(b) from 15 to 40 parts by wt of a copolymer of 20% to 30% by wt acrylonitrile with 80% to 70% by wt of a mixture comprising a major portion by wt alpha-methyl styrene and a minor portion of styrene, said copolymer forming a single phase with said poly(vinyl chloride),

(c) from 5 to about 20 parts by wt, combined, of a stabilizer, lubricant, processing aid and impact modifier, and,

(d) from about 10% to about 30% by wt of glass fibers having a diameter less than about 20 microns, wherein said glass fibers are coated with a size consisting essentially of (i) an aminosilane coupling agent having a reactive amine moiety which upon reaction with said poly(vinyl chloride) results in a compound having a peak in a proton magnetic resonance spectra at 5.65 ppm, and (ii) a polymer film former having a basicity greater than that of poly(vinyl acetate) and sufficient to leave enough said resin coupled to said fibers after thermoforming, to yield a ratio of total chlorine to carbon Cl(2p)/C(ls) of at least 0.91, measured as the ratio of areas under the peaks, after extraction of said composition, after thermoforming, with tetrahydrofuran,

whereby a glass fiber reinforced composite molded from said blend has a heat distortion temperature (HDT) of at least 80° C. and a tensile strength at least 10,000 psi (1.82 MPa).

5,008,146

ZINC-CARBON ANTIFOULING COATING

Francis L. Keohan, Plymouth, Mass., assignor to Cape Cod Research, Inc., Buzzards Bay, Mass.

Continuation of Ser. No. 267,350, Nov. 4, 1988, abandoned. This application Oct. 10, 1989, Ser. No. 419,143

Int. Cl.[5] B05D *5/00*

U.S. Cl. 428—328 5 Claims

1. A method for rendering underwater structures resistant to fouling by pestiferous organisms which comprises contacting said structures with a composition comprising 10 to 60 percent by weight metallic zinc in combination with 5 to 40 percent carbon.

5,008,147

MAGNETIC RECORDING MEDIUM

Katsumi Ryoke; Masatoshi Takahashi; Akihiro Hashimoto, and Kazuo Hasumi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 8, 1988, Ser. No. 216,566

Claims priority, application Japan, Jul. 8, 1987, 62-170511

Int. Cl.[5] G11B *23/00*

U.S. Cl. 428—323 10 Claims

1. A magnetic recording medium comprising a nonmagnetic support having on one surface thereof a magnetic layer and on the opposite surface thereof a backing layer comprising nonmagnetic particles dispersed in a binder, wherein said binder of said backing layer comprises from about 20 to 90 wt % of polycarbonate polyurethane, and said backing layer comprises from about 40 to 200 parts by weight of said binder per 100 parts by weight of said nonmagnetic particles.

5,008,148

PROCESS FOR THE PRODUCTION OF PLASTIC MOULDED ARTICLES WITH IMPROVED WEATHERING RESISTANCE

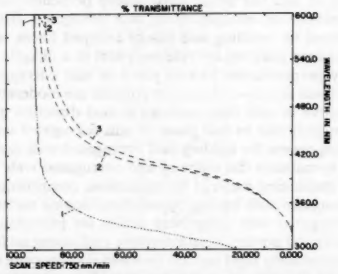
Siegfried Thurm, Meerbusch; Reimer Holm, Bergisch-Gladbach; Christian Leuschke, Dormagen; Dietrich Rathmann, Leverkusen, and Lutz Schrader, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Jun. 12, 1989, Ser. No. 366,719

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1988, 3821131

Int. Cl.[5] B32B *27/36*

U.S. Cl. 428—336 14 Claims



1. Process for coating moulded plastic articles of thermoplastic polycarbonates or thermoplastic polyarylene sulphides, characterised in that the moulded plastic articles are directly coated with metal oxides which absorb electromagnetic radiation at wave lengths of from 250 nm to 400 nm.

5,008,149

CERAMIC SUBSTRATE HAVING A METALLIC LAYER THEREON AND A PROCESS FOR MANUFACTURING THE SAME

Yasunori Taga; Hideya Yamadera, both of Nagoya; Keiji Aoki, Susono, and Tadashi Hattori, Okazaki, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi and Nippon Soken Inc., Nishio, both of, Japan

Filed Nov. 22, 1988, Ser. No. 274,481
Claims priority, application Japan, Nov. 24, 1987, 62-295823
Int. Cl.[5] B32B *15/04, 15/20*
U.S. Cl. 428—336 5 Claims

1. A ceramic substrate having a metallic layer thereon comprising:

a ceramic substrate comprising alumina;

a metallic layer containing at least molybdenum (Mo), and formed on said ceramic substrate; and

a bonding layer comprising composite oxides composed of aluminum (Al) and at least one metal selected from the group consisting of titanium (Ti), zirconium (Zr) and niobium (Nb), and formed between said ceramic substrate and said metallic layer by chemical reaction between said alumina of said ceramic substrate and said bonding layer;

in which said ceramic substrate and said metallic layer is bonded by means of said bonding layer.

3. The ceramic substrate having a metallic layer thereon according to claim 1, wherein the thickness of said bonding layer is in the range of 0.005 to 0.5 μm.

5,008,150

PHOTOGRAPHIC SUPPORT WITH AN UNDERCOATING LAYER ON A RESIN COATED BASE SHEET

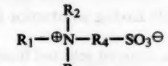
Tetsuya Ashida, Tokyo, and Touru Noda, Matsudo, both of Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Oct. 3, 1988, Ser. No. 252,138
Claims priority, application Japan, Oct. 2, 1987, 62-250466; Oct. 16, 1987, 62-261417; Dec. 22, 1987, 62-324965
Int. Cl.[5] B32B *27/08;* G03C *1/37;* C08L *89/00*
U.S. Cl. 428—340 9 Claims

1. A photographic support comprising a resin coated base sheet and formed thereon an undercoating layer comprising

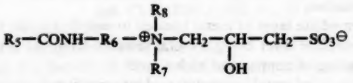
(a) a hydrophilic colloid, and

(b) at least one compound selected from the group consisting of a compound of the formula:



(I)

wherein R_1, R_2 and R_3 are independently hydrogen or an alkyl group; and R_4 is an alkylene group, and a compound of the formula:



(II)

wherein R_5, R_7 and R_8 are independently hydrogen or an alkyl group; and R_6 is an alkylene group, the coating amount of said undercoating layer being 0.01 g/m^2 to 1.0 g/m^2 on dry basis.

5,008,151

GLASS POWDER ADHESIVE SHEET

Takashi Tominaga; Souji Nishiyama; Takahumi Sakuramoto, and Makoto Honda, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Aug. 12, 1988, Ser. No. 231,560
Claims priority, application Japan, Sep. 11, 1987, 62-228934
Int. Cl.[5] B32B *7/12*
U.S. Cl. 428—343 12 Claims

1. A multilayer glass powder adhesive sheet comprising:

a glass powder molding layer consisting essentially of glass powder and a resin binder; and

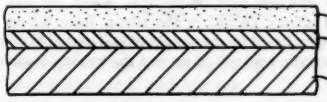
an adhesive layer having a thermal decomposition initiation temperature higher than that of said resin binder, provided on the surface of the glass powder molding layer wherein the difference between the thermal decomposition initiation temperature of said adhesive layer and that of said resin binder is at least 10° C.

5,008,152

INK COMPOSITION FOR THERMAL TRANSFER PRINTING AND FILM FOR THERMAL TRANSFER PRINTING

Hisanobu Mikamo, Ibaraki; Noboru Odani, and Akio Shimizu, both of Takatsuki, all of Japan, assignors to Hitachi Maxell Ltd., Osaka, Japan

Filed Jul. 11, 1989, Ser. No. 377,968
Claims priority, application Japan, Jul. 14, 1988, 63-175532; Apr. 25, 1989, 64-106954
Int. Cl.[5] B41M *5/26;* C09D *11/00*
U.S. Cl. 428—423.1 8 Claims



1. An ink composition for thermal printing, which composition comprises a coloring agent and a mixture of an thermoplastic material selected from the group consisting of thermoplastic resins and waxes as a binder.

5. A film for thermal transfer printing comprising a substrate and an ink layer which is formed on a surface of the substrate from an ink composition comprising a coloring agent and a mixture of an aromatic ester-containing polyurethane and at least one thermoplastic material selected from the group consisting of thermoplastic resins and waxes as a binder.

5,008,153

CORROSION INHIBITIVE PRETREATMENT FOR "COPPER-FREE" MIRRORS

Deborah E. Hayes, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 8, 1988, Ser. No. 281,358
Int. Cl.[5] C23C *26/00*
U.S. Cl. 428—429 11 Claims

1. An improved process of depositing a thin metallic film on a substrate by applying to the substrate a thin metallic film the improvement comprising pretreating the surface of the substrate with a pretreatment composition comprising a protective material before applying the thin metallic film to the substrate, said pretreatment composition comprising

(A) an adhesion promoter bonding or coupling to the interface of the substrate and the thin metallic film and

(B) a corrosion inhibitor wherein (A) is selected from the group consisting of a silane compound, a titanium compound, a zirconium compound, and a mixture thereof, and (B) is selected from the group consisting of a nitrogen containing heterocyclic compound, a corrosion inhibitive

metallic compound other than recited in (A) and a mixture thereof.

7. An article of matter which is prepared by the process of claim 1.

5,008,154

COMPOSITION AND METHOD FOR PRIMING AND COATING SILICONE SUBSTRATES

Michael D. Meddaugh, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 283,423, Dec. 12, 1988, Pat. No. 4,923,946. This application Jan. 2, 1990, Ser. No. 459,858

Int. Cl.[5] B32B *9/04*; B05D *3/10*

U.S. Cl. 428—447 10 Claims

1. A method comprising applying a continuous layer of a primer composition to a moisture-cured silicone substrate, said primer composition consisting essentially of a partial hydrolyzate of an aminoalkyl-susbstituted trialkoxysilane, prepared by mixing an aminoalkyl-substituted trialkoxysilane and less than one mol of water per mol of silicon-bonded alkoxy radical in the silane, from 0.1 to 10 percent by weight, based on the weight of said partial hydrolyzate, of a carboxylic acid salt of tin and the balance a solvent component; and evaporating the solvent component from the continuous layer of primer composition to provide a primed silicone substrate.

6. An article comprising a moisture-cured silicone substrate bearing a coating composition durably adhered thereto with a continuous primer layer consisting essentially of the composition obtained by drying a primer composition consisting essentially of a partial hydrolyzate of an aminoalkyl-substituted trialkoxysilane prepared by mixing an aminoalkyl-substituted trialkoxysilane and less than one mol of water per mol of silicon-bonded alkoxy radical in the silane, from 0.1 to 10 percent by weight, based on the weight of said partial hydrolyzate, of a carboxylic acid salt of tin and the balance a solvent component.

5,008,155

AQUEOUS DISPERSIONS FOR THE PREPARATION OF CROSSLINKABLE COATINGS

Dieter Engel, Kelsterbach; Josef Mondt, Königstein/Taunus, and Klaus Zimmerschied, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 143,346, Jan. 5, 1988, abandoned, which is a continuation of Ser. No. 714,046, Mar. 19, 1985, abandoned. This application Sep. 19, 1989, Ser. No. 409,082

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1984, 3410234

Int. Cl.[5] B32B *15/08, 27/00*

U.S. Cl. 428—463 10 Claims

9. A solid substrate having a bake-coated surface coating thereon in the form of a crack-free film, the composition of which is that of a dried and baked aqueous dispersion, wherein the aqueous dispersion is one which is useful for producing a crosslinkable surface coating and which contains, as binder, a crosslinkable dispersion copolymer formed from olefinically-unsaturated monomers and, optionally, further comprising a member selected from the group consisting of pigment, dyestuff, extender, water-soluble and/or water-dispersible resin, extraneous crosslinking agent, crosslinking catalyst, thickener, thixotropic agent, wetting agent, anti-corrosion agent, anti-freeze agent, light stabilizer, anti-oxidant and anti-foaming agent; dispersed copolymer particles of the dispersion having average particle diameters of from 0.5 to 10 microns; the proportion of monomer units carrying crosslinkable groups in the dispersion copolymer being greater than 10% by weight, relative to the dispersion copolymer.

5,008,156

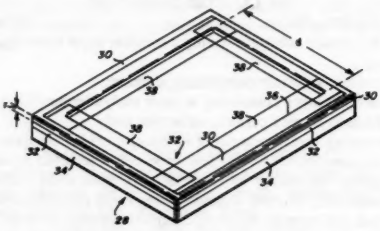
PHOTOCHEMICALLY STABLE MID AND DEEP ULTRAVIOLET PELLICLES

Gilbert H. Hong, Los Altos Hills, Calif., assignor to Exion Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 929,060, Nov. 7, 1986,. This application Dec. 6, 1988, Ser. No. 280,702

Int. Cl.[5] B32B *27/08*

U.S. Cl. 428—506 18 Claims



1. A pellicle for transmitting mid and deep ultraviolet light for use in a projection printing process comprising:

a core layer selected from the group consisting of polymethylmethacrylate polymer and polyglycidylemethacrylte; and

at least one antireflective layer selected from the group consisting of poly-1H, 1H Pentadecafluorooctyl methacrylate and poly-1H, 1H Pentadecafluorooctyl acrylate coated on a surface in close physical proximity to the core layer.

5,008,157

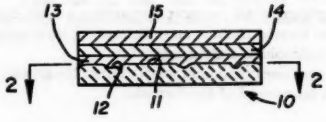
METALLIZED ARTICLE AND PROCESS FOR METALLIZING A NON-CONDUCTIVE ARTICLE

Michael N. Paxos, 1667 Pinecone, NW., North Canton, Ohio 44720

Filed Nov. 22, 1989, Ser. No. 440,252

Int. Cl.[5] B32B *15/04*

U.S. Cl. 428—612 4 Claims



1. A metallized article having an exterior surface comprising:

a substrate being of a material selected from the group consisting of ceramic, glass, porcelain and clay, said substrate containing a plurality of depressions on its exterior surface;

a first layer of palladium metal mechanically bonded to the surface of said substrate, said mechanical bond being enhanced by the interaction of said first layer with said depressions;

an intermediate layer of metal bonded to said first layer, said intermediate layer being a metal selected from the group consisting of copper and nickel; and

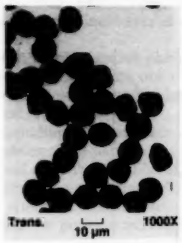
a finish layer of metal bonded to said intermediate layer, said finish layer comprising a metal selected from the group consisting of gold, platinum, rhodium, palladium, silver, bronze, brass, copper, nickel, iron, chromium, tin, zinc, and mixtures thereof.

5,008,158

PRODUCTION OF METAL MATRIX COMPOSITES REINFORCED WITH POLYMER FIBERS

Que-Tsang Fang, Murrysville, and Caroline Wei-Berk, Monroeville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 7, 1988, Ser. No. 267,844
Int. Cl.[5] C22C 1/09
U.S. Cl. 428—614 16 Claims



1. A metal matrix composite comprising:
non-woven liquid crystal polymer fibers; and
a metal alloy matrix surrounding said fibers, said metal alloy matrix having been formed by infiltrating a liquid phase of said metal into a preform of said fibers having no coating or surface treatment.

3. A metal matrix composite comprising:
polymer fiber having lengths of less than two inches; and
a metal alloy matrix surrounding said polymer fiber.

5,008,159

METHOD OF PRODUCING SILICON CARBIDE-BASED BODIES

Ian Higgins, Preston, and Andrew Baxendale, Up Holland, both of United Kingdom, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Nov. 3, 1989, Ser. No. 431,301
Claims priority, application United Kingdom, Nov. 10, 1988, 8826300
Int. Cl.[5] C04B 35/56
U.S. Cl. 428—614 8 Claims

1. A method of producing a body comprising silicon carbide, the method comprising forming a porous compact comprising, silicon carbide, a carbide of a metal, and carbon, and infiltrating the compact with a mixture comprising molten said metal and molten silicon.

8. A reaction-sintered silicon carbide-based body comprising silicon carbide, metal carbide, and silicide of said metal, made by forming a porous compact comprising silicon carbide, a carbide of the metal, and carbon, and infiltrating the compact with a mixture comprising molten said metal and molten silicon.

5,008,160

METHOD OF SECURING ADHERENT COATINGS BY CVD FROM METAL CARBONYLS, AND ARTICLES THUS OBTAINED

William C. Jenkin, 382 Dorchester Rd., Akron, Ohio 44320

Division of Ser. No. 217,329, Jul. 11, 1988, Pat. No. 4,938,99.
This application Apr. 12, 1990, Ser. No. 508,356
Int. Cl.[5] B32B 15/00, 15/20
U.S. Cl. 428—656 12 Claims

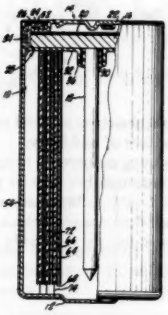
1. A composite article comprising:
(a) a substrate having a surface and comprising a metal which readily chemisorbs carbon monoxide, said metal forming at least the surface of said substrate;
(b) a thin undercoating layer of a metal which adheres to the substrate metal and which has little or no tendency to chemisorb carbon monoxide; and
(c) an outercoat layer of substantially uniform thickness, said outercoat being of a metal which adheres to the undercoat metal but does not readily adhere to the substrate metal when deposited directly thereon from a metal carbonyl;
(d) said outercoat layer having been deposited on said undercoat layer at from about 225° C. to about 275° C. from vaporized carbonyl of the outercoat metal; said undercoat layer being essentially free of metal oxide surface impurities.

5,008,161

BATTERY ASSEMBLY

Lowell E. Johnston, 11515 Welebir St., Loma Linda, Calif. 92354

Filed Feb. 1, 1989, Ser. No. 304,853
Int. Cl.[5] H01M 2/06, 2/08
U.S. Cl. 429—7 17 Claims



1. A battery comprising
a container having an opening therein;
a plate positioned in said opening;
a terminal attached to said plate and extending into said container;
a sleeve concentrically positioned about said terminal;
a nonconductive seal positioned about said terminal against said plate and between said sleeve and said terminal and extending in substantially juxtaposition with said plate to about the periphery of said plate between said plate and said container in said opening, said sleeve being compressed about said terminal to seal said container at said terminal.

5,008,162

TEST CELL STRUCTURE

Klaus Tomantschger, 6197 Montevideo Rd., Mississauga, Ontario, Canada L5N 2E8 , and Josef Soltys, 246 Third Line, Oakville, Ontario, Canada L6L 4A1

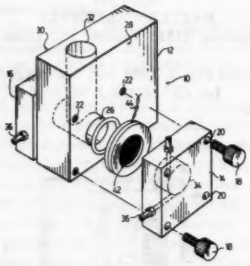
Filed May 11, 1988, Ser. No. 192,537
Int. Cl.[5] H01H 8/04
U.S. Cl. 429—34 20 Claims

1. A test cell structure for electrochemical cell technology, said test cell having a pair of electrodes, and being capable of easy assembly and dis-assembly; said test cell being of the type which requires a flow of reactant fluids, either gases or liquids, and liquid electrolyte, into and away from the vicinity of the electrodes, where said test cell structure comprises:
a body having two opposed side faces and an electrolyte chamber extending therebetween, and an electrolyte reservoir in fluid communication with said electrolyte chamber;
a pair of reactant fluid chamber blocks adapted for mounting to said body, one at each of said two opposed side faces thereof;
each of said reactant fluid chamber blocks having a cavity formed in a first face thereof, which cavity is open at said

first face and closed away from said first face so as to form a reactant fluid chamber adapted to face the end of said electrolyte chamber at the side face of said body to which each respective reactant fluid chamber block is mounted;

discrete means arranged for conducting reactant fluid to and away from each of said reactant fluid chambers;

and electrode mounting means for mounting a pair of substantially planar electrodes in interposed relation between



said reactant fluid chambers and said electrolyte chamber, one at each side face of said body;

said electrode mounting means each comprising a frame into which an electrode member may be placed, and having substantially fluid-tight sealing relationship with said body and said reactant fluid chamber blocks when said blocks are securely mounted to said body at each side face thereof.

5,008,163

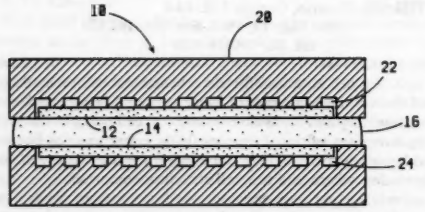
CONDUCTIVE CERAMIC COMPOSITION AND METHOD OF PREPARATION

James L. Smith, Lemont, and Eugenia H. Kucera, Downers Grove, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 26, 1989, Ser. No. 357,247

Int. Cl.[5] H01M *4/88, 4/90*

U.S. Cl. 429—40 **16 Claims**



1. A ceramic composition comprising a multivalent metal oxide, said metal oxide including an alkali metal-transition metal oxygenate, with the ratio of oxygen to multivalent metal in non-stoichiometric relation, deficient in oxygen and wherein the composition exhibits an electrical conductivity substantially greater than the electrical conductivity of a corresponding stoichiometric composition with balanced oxygen.

5,008,164

HYDROGEN-ABSORBING ALLOY ELECTRODE

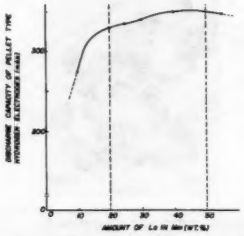
Nobuhiro Furukawa, Hirakata; Kenji Inoue, Sumoto; Mitsuzo Nogami, Yawata; Seiji Kameoka, Osaka, and Motoo Tadokoro, Ashiya, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Dec. 11, 1989, Ser. No. 448,438

Claims priority, application Japan, Apr. 18, 1989, 1-98322

Int. Cl.[5] H01M *4/24, 4/38;* **C22C** *19/03*

U.S. Cl. 429—59 **6 Claims**



1. A hydrogen-absorbing alloy electrode mainly comprising a hydrogen-absorbing alloy represented by a formula $MmNi_aCo_bMn_cO$, Mm representing a Misch metal comprising rare earth elements including La, wherein $2.5<a<3.5$, $0.4<b<1.5$, $0.2<c<1.0$, and $3.85<a+b+c<4.78$ and wherein La is contained in said alloy in a weight percent relative to the total weight of rare earth of $20<La<50$.

5,008,165

ELECTROCHEMICAL CELL

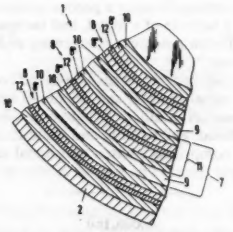
Hans-Peter Schmöde, Brilon, Fed. Rep. of Germany, assignor to Accumulatorenwerke Hoppecke Carl Zoellner Sohn GmbH & Co. KG, Brilon, Fed. Rep. of Germany

Filed Aug. 31, 1989, Ser. No. 401,018

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1988, 3829419

Int. Cl.[5] H01M *10/40, 2/16*

U.S. Cl. 429—94 **11 Claims**



1. In an electrochemical cell particularly of winding construction, where the electrodes, namely the anode and the cathode, accompanied by the respective interposition of separators, are disposed collectively in a circular arrangement in layers progressively from the inside toward the outside, comprising the improvement therewith wherein:

the most outwardly disposed electrode layer of said cell has a thickness that is less than the thickness of each respectively more inwardly disposed electrode layer of said cell;

said separators being comprised of microfibers that are set view a binder;

said electrochemical cell including an organic electrolyte, said electrolyte being an organic solvent mixture of ethylene carbonate and dioxolane in which is dissolved a conducting salt in the form of a salt of perchloric acid.

5,008,166

METHOD FOR MANUFACTURING A COLOR FILTER

Toshihiro Aoki, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 938,025, Dec. 4, 1986, abandoned. This application Nov. 8, 1989, Ser. No. 434,570

Claims priority, application Japan, Dec. 9, 1985, 60-276520

Int. Cl.[5] G03F 9/00

U.S. Cl. 430—7 19 Claims

1. A method of manufacturing a color filter having color filter elements of the three primary colors which are arranged in a pattern employed in a liquid crystal display device, comprising the steps of:

a first step of forming a negative photosensitive and colorable one-layer film on at least one of a pair of substrates employed in the liquid crystal color display device and facing each other;

a second step including a first sub-step of positioning a mask having a predetermined pattern at a first position relative to said film and exposing said film at least one time, and a second sub-step of positioning said mask, substantially sequentially after said first sub-step, at a second position away from said first position and exposing said film at least one time;

a third step of removing portions of the film which are not exposed when said mask is in both of said first and said second positions in the second step, whereby preventing said portions from forming said color filter elements; and

a fourth step following either one of said first and said third steps, for coloring at least a part of said film in one of the three primary colors.

5,008,167

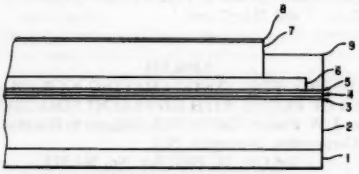
INTERNAL METAL OXIDE FILLED MATERIALS FOR ELECTROPHOTOGRAPHIC DEVICES

Robert C. U. Yu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 15, 1989, Ser. No. 451,240

Int. Cl.[5] G03G 5/14

U.S. Cl. 430—56 28 Claims



1. An electrophotographic imaging member comprising a layer containing homogeneously dispersed metal oxide particles with a particle diameter of about 30 Angstroms to about 1000 Angstroms, said metal oxide particles having been produced through internal precipitation in a coating solution for said layer.

5,008,168

PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY

Masaru Nakagawa; Fumio Sumino, both of Yokohama; Masaaki Hiro, Kanagawa; Noboru Kashimura, Kawasaki, and Shin Nagahara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

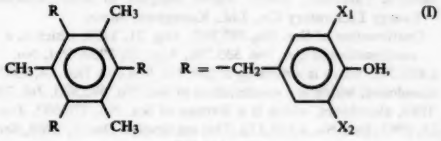
Filed Apr. 17, 1989, Ser. No. 338,844

Claims priority, application Japan, Apr. 18, 1988, 63-95851; Mar. 2, 1989, 1-51729

Int. Cl.[5] G03G 5/06

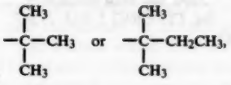
U.S. Cl. 430—56 42 Claims

1. A photosensitive member for electrophotography comprising: an electroconductive substrate, and a photosensitive layer disposed thereon comprising an organic photoconductor; said photosensitive layer containing, at least, a compound represented by the following formula (I):



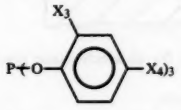
(I)

wherein X_1 denotes



and X_2 denotes a hydrogen atom, an alkyl group having 1–10 carbon atoms or an alkenyl group having 2–10 carbon atoms; and

a compound represented by the following formula (II):



(II)

wherein X_3 and X_4 respectively denote an alkyl group having 1–10 carbon atoms or an alkenyl group having 2–10 carbon atoms.

5,008,169

PHOTOCONDUCTIVE IMAGING MEMBERS WITH POLYPHOSPHAZENES

Robert C. U. Yu, Webster, and Santokh S. Badesha, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 28, 1989, Ser. No. 386,321

Int. Cl.[5] G03G 5/047

U.S. Cl. 430—59 33 Claims

1. A photoconductive imaging member comprised of a supporting substrate, a ground plane layer, a hole blocking-adhesive layer comprised of polyorganophosphazene, a photogenerating layer, and a hole transport layer.

5,008,170

PHOTORECEPTOR FOR ELECTROPHOTOGRAPHY

Kenichi Karakida; Shigeru Yagi; Yuzuru Fukuda; Masayuki Nishikawa; Te N. Roh; Noriyoshi Takahashi; Masato Ono; Masaki Yokoi, and Yumiko Komori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1989, Ser. No. 370,312

Claims priority, application Japan, Jun. 24, 1988, 63-154796

Int. Cl.[5] G03G 5/14

U.S. Cl. 430—65 6 Claims

1. A photoreceptor for electrography, comprising: a photoconductive layer, a first surface layer, a second surface layer and a third surface layer formed in sequence on a support, said photoconductive layer being substantially composed of amorphous silicon and said first, second and third surface layers being substantially composed of amorphous silicon added with nitrogen atoms, and wherein the film thicknesses d_1, d_2 and d_3 of said first, second and third surface layers and the nitrogen concentrations c_1, c_2 and c_3 of said first, second and third surface layers satisfy the following relation: $d_2 > d_1$, $d_2 > d_3$ and $c_3 > c_2 > c_1$.

5,008,171

PRINTING MEMBER FOR ELECTROSTATIC PHOTOCOPYING

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

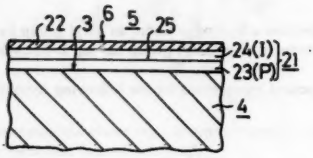
Continuation of Ser. No. 395,995, Aug. 21, 1989, which is a continuation of Ser. No. 335,708, Apr. 10, 1989, Pat. No. 4,889,782, which is a division of Ser. No. 814,083, Dec. 24, 1985, abandoned, which is a continuation of Ser. No. 502,583, Jul. 21, 1983, abandoned, which is a division of Ser. No. 276,503, Jun. 23, 1981, Pat. No. 4,418,132. This application Dec. 1, 1989, Ser. No. 444,307

Claims priority, application Japan, Jun. 25, 1980, 55-86801

The portion of the term of this patent subsequent to Dec. 26, 2006, has been disclaimed.

Int. Cl.[5] G03G *5/082, 5/147*

U.S. Cl. 430—67 3 Claims



1. A printing drum for an electrostatic photocopying machine comprising:

a conductive substrate;

a non-single-crystal p-type semiconductor layer formed on said conductive substrate;

a non-single-crystal intrinsic semiconductor layer formed on said p-type semiconductor layer in order to induce a built-in electric field across the interface therebetween an insulating layer formed on said intrinsic layer where the band gaps of the p-type layer and the intrinsic layer are substantially less than the band gap of an insulating layer formed on said intrinsic layer; and

said insulating layer having an external surface to permit the passage of charge photo-generated in said intrinsic layer so that charge on the external surface can be neutralized;

where said p-type layer, said intrinsic layer, and said insulating layer consist essentially of materials consisting principally of silicon, silicon with nitrogen, silicon with carbon and silicon with oxygen either in stoichiometric or non-stoichiometric amounts.

5,008,172

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

Takashi Rokutanzono, Numazu; Yukio Ide, Mishima; Hiroshi Nagame, Numazu; Kohichi Ohshima, Mishima; Narihito Kojima, and Shinji Nousho, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 24, 1989, Ser. No. 356,140

Claims priority, application Japan, May 26, 1988, 63-126949

Int. Cl.[5] G03G *15/04*

U.S. Cl. 430—67 14 Claims

1. An electrophotographic photoconductor comprising an electroconductive substrate, a photoconductive layer formed on said electroconductive substrate, and a protective layer formed on said photoconductive layer, said protective layer comprising a binder resin and finely-divided particles of at least one metal oxide with the surface thereof being coated with a coupling agent selected from the group consisting of a titanate-type coupling agent, a fluorine-containing silane coupling agent, and an acetoalkoxylaluminum diisopropylate, dispersed in said binder resin.

5,008,173

PHTHALOCYANINE CRYSTAL, PROCESS FOR MANUFACTURE THEREOF AND ITS USE FOR ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIAL

Yoshikazu Mimura, Tokyo; Keiichi Takano, deceased, late of Kanagawa by Isao Takano, Legal Representative , and Tomohisa Gotou, Tokyo, all of Japan, assignors to NEC Corporation, Tokyo, Japan

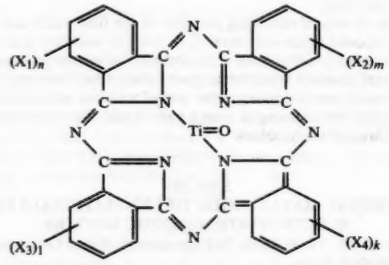
Division of Ser. No. 339,442, Apr. 17, 1989, Pat. No. 4,994,566. This application Aug. 13, 1990, Ser. No. 567,042

Claims priority, application Japan, Apr. 15, 1988, 63-93051; Mar. 15, 1989, 1-64801

Int. Cl.[5] G03G *5/06*

U.S. Cl. 430—78 2 Claims

1. An electrophotographic photosensitive material containing a conductive layer and a photosensitive layer, characterized in that it contains, in its photosensitive layer, a charge generation material and a charge transfer material and that it contains, as the charge generation material, a titanyl phthalocyanine compound represented by the general formula:



wherein X_1, X_2, X_3 and X_4 each independently represent various halogen atoms and n, m, l and k represent numerals of 0 to 4 and shows, in an infrared absorption spectrum, characteristic strong absorption peaks at $1,332 \pm 2$ cm^{-1}, $1,074 \pm 2$ cm^{-1}, 962 ± 2 cm^{-1} and 783 ± 2 cm^{-1}.

5,008,174

COLOR PROOFING SYSTEM HAVING A GRADUATED LAYER OF RESINS WITH DIFFERENT SOLUBILITIES

Stephan J. W. Platzer, Califon, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Oct. 21, 1989, Ser. No. 261,372

Int. Cl.[5] G03C *5/18, 7/00;* G03F *7/30*

U.S. Cl. 430—143 11 Claims

1. A method for forming a colored image which comprises

(A) providing a photosensitive element which comprises

(i) a substrate having a release surface; and

(ii) a coated and dried photosensitive solution, defining a photosensitive layer, on said release surface, which photosensitive layer comprises a photosensitizer selected from the group consisting of positive-working, naphthoquinone diazide compounds, and negative-working, polymeric diazonium compounds in a sufficient amount to photosensitize said photosensitive layer; and at least one pigment dispersion in sufficient amount to uniformly color said photosensitive layer, said pigment dispersion being formed by intimately pre-admixing at least one pigment and a first resinous binder compound which is the binder for the said pigment or pigments; and a second resinous binder which is different from the binder for the pigment or pigments, which second resinous binder is present in sufficient amount to uniformly bind the photosensitive layer components in a substantially uniform film and wherein said

second resinous binder is not intimately bound by pre-admixture to said pigment; and

(iii) a coated and dried a nonphotosensitive adhesive composition solution, defining an adhesive layer, directly on said photosensitive layer, which adhesive composition solution comprises one or more thermoplastic polymers and a solvent composition in which the first resinous binder and photosensitizer are insoluble or sparingly soluble and in which the second resinous binder is soluble such that after having coated and dried the adhesive composition solution on the photosensitive layer, the second resinous binder is more preferentially migrated toward the adhesive layer than toward the substrate; which adhesive layer is substantially nontacky at room temperature and can be transferred by lamination at temperatures of from about 60° C. and 180° C.; and

B. either

(a) laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and removing said substrate by the application of peeling forces; and imagewise exposing said photosensitive layer to actinic radiation to thereby form image areas in either the exposed or unexposed areas and oppositely nonimage areas in either the unexposed or exposed areas; or

(b) imagewise exposing said photosensitive layer to actinic radiation to thereby form image areas in either the exposed or unexposed areas and oppositely nonimage areas in either the unexposed or exposed areas; and laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and removing said substrate by the application of peeling forces; or

(c) laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and imagewise exposing said photosensitive layer to actinic radiation to thereby form image areas in either the exposed or unexposed areas and oppositely nonimage areas in either the unexposed or exposed areas; and removing said substrate by the application of peeling forces; and

C. thereafter removing the nonimage areas of said photosensitive layer with a liquid developer, which removing is conducted at a temperature at which said adhesive layer is substantially nontacky.

5,008,175

COPYING MATERIALS

Shane Hsieh, Bridgewater, N.J., and Paul Stahlhofen, Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 549,059, Nov. 7, 1983, abandoned. This application Feb. 16, 1990, Ser. No. 480,775

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3246037

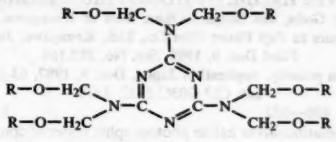
Int. Cl.[5] G03C *1/52, 1/54, 1/492, 1/72*

U.S. Cl. 430—155 **14 Claims**

1. A light-sensitive composition which comprises in admixture, a binding amount of a water-insoluble binder which is soluble in aqueous-alkaline solutions; and a light-sensitizing amount of a light-sensitive component selected from the group consisting of o- or p- quinone diazides, diazonium salt polycondensation products, or a mixture of

(a) a compound which eliminates an acid on exposure to light and

(b) a compound having at least one C—O—C— group which can be split by acid; and a thermo-crosslinking amount of a thermo-crosslinking compound which thermo-crosslinking compound is a cyclical acid amide of the general formula:



wherein R denotes a hydrogen atom or an alkyl group whereby said composition is capable of forming a photographic element when coated on a suitable support, and said binding amount is that amount which produces a difference between the exposed and unexposed areas of said element upon development, and the amount of thermo-crosslinking compound present is an amount which does not substantially reduce the shelf life of said composition and which enables said composition to be baked at lower temperatures than a similar composition without the thermo-crosslinking compound and without substantially reducing the developer resistance of said composition.

5,008,176

INFORMATION RECORDING MEDIUM HAVING A GLASS SUBSTRATE

Tetsuya Kondo, Yokohama, and Noboru Kawai, Komae, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 28, 1988, Ser. No. 250,391

Claims priority, application Japan, Sep. 29, 1987, 62-242528

Int. Cl.[5] G03F *7/09;* **G03C** *1/765*

U.S. Cl. 430—272 **20 Claims**

1. An information recording disk for recording an information signal along a track defined by a depression on the disk as a change of physical property of a recording material deposited on the track comprising:

a disk-shaped glass substrate made of a glass defined by a flat first surface at a first side and a second surface carrying a groove corresponding to the track at a second side opposite to the first side, said groove being defined by a bottom surface having a surface roughness substantially smaller as compared to the surface roughness caused at a bottom surface of a groove on a silica glass substrate when both the disk-shaped glass substrate and silica glass substrate are dry-etched under same conditions, and said disk-shaped glass substrate comprising SiO_2 component and one or both of Al_2O_3 and BaO components while free from those alkali and alkali earth elements having one or more elements selected from a group consisting of sodium, magnesium, potassium, and calcium;

a recording layer comprised of the recording material which changes in physical property responsive to a projected energy beam modulated with the information signal, said recording layer deposited on the second surface of the substrate having one side thereof making an intimate contact with the second surface, said recording layer carrying said depression which defines the track on other side of the recording layer; and

a protection layer deposited on said another side of the recording layer so that the depression on the recording layer is buried under the protection layer with an intimate contact between the protection layer and the recording layer.

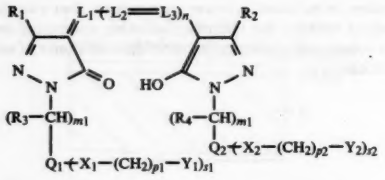
5,008,177

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Kensuke Goda, and Shigeru Ohno, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 9, 1988, Ser. No. 282,164
Claims priority, application Japan, Dec. 9, 1987, 62-311421
Int. Cl.[5] G03C 1/12, 1/30
U.S. Cl. 430—522 8 Claims

1. A gelatino-silver halide photographic material comprising at least one light-sensitive silver halide emulsion layer and at least one non-emulsion auxiliary photographic layer provided on a support, wherein at least one of said layers comprises a compound represented by formula (I) and at least one hardener selected from the group consisting of compounds of formula (II) and formula (III);



(I)

where R_1 and R_2 each independently represents —$COOR_5$ or

R_3 and R_4 each independently represents a hydrogen atom or an alkyl group;

R_5 and R_6 each independently represents a hydrogen atom, an alkyl group or an aryl group or together a 5-membered or 6-membered ring;

Q_1 and Q_2 each independently represents an aryl group; X_1 and X_2 each independently represents a divalent linking group or a bond;

Y_1 and Y_2 each independently represents a sulfo group or a carboxyl group;

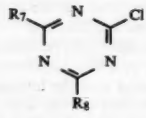
L_1, L_2 and L_3 each independently represents a methine group;

m_1 and m_2 each independently represents 1 or 2;

n represents 0, 1 or 2;

p_1 and p_2 each independently represents 0, 1, 2, 3 or 4; and

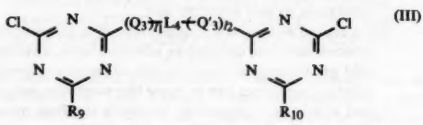
s_1 and s_2 each independently represents 1 or 2;



(II)

where R_7 represents a chlorine atom, a hydroxyl group, an alkyl group, an alkoxy group, an alkylthio group, —OM in which M is a monovalent metal atom, —NR^IR^{II} or —$NHCOR^{III}$ wherein R^I, R^{II} and R^{III} are each independently a hydrogen atom, an alkyl group or an aryl group; and

R_8 has the same meaning as R_7 except that it does not represent a chlorine atom;



(III)

where R_9 and R_{10} each independently represents a chlorine atom, a hydroxyl group, an alkyl group, an alkoxy group or -OM in which M is a monovalent metal atom;

Q_3 and Q_3' each independently represents a linking group represented by —O—, —S— or —NH—;

L_4 represents an alkylene group or an arylene group; and

l_1 and l_2 each independently represents 0 or 1.

5,008,178

SHEET OR WEB CARRYING AN ANTISTATIC LAYER

Etienne A. Van Thillo, Essen, and Lucien J. Van Gossum, Kontich, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 2, 1989, Ser. No. 305,391
Claims priority, application European Pat. Off., Mar. 22, 1988, EP88200531.7
Int. Cl.[5] B32B 5/16; G03C 1/76
U.S. Cl. 430—527 8 Claims

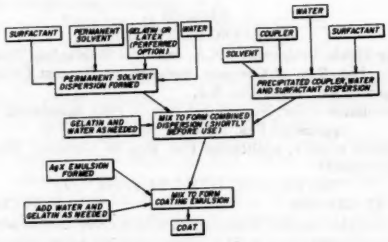
1. A sheet or web material being a subbed or unsubbed hydrophobic resin support or paper support coated with at least one hydrophobic resin layer having at least on one side an outermost antistatic layer containing colloidal silica, wherein the antistatic layer is free from any cationic surfactant and consists for at least 70% by weight of colloidal silica having an average grain size smaller than 7 nm and a surface area of at least 500 m2 per gram, the colloidal silica being present at a coverage of at least 50 mg per m2.

5,008,179

INCREASED ACTIVITY PRECIPITATED PHOTOGRAPHIC MATERIALS

Krishnan Chari, Rochester; Wayne A. Bowman, Walworth, and Brian Thomas, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 22, 1989, Ser. No. 440,160
Int. Cl.[5] G03C 7/32, 7/388
U.S. Cl. 430—546 31 Claims



1. A method of forming photographic dispersions comprising

providing an aqueous dispersion of photographic coupler:

providing an aqueous dispersion of activating permanent solvent;

combining said dispersion of photographic coupler and said dispersion of permanent solvent to form a combined dispersion; and

mixing said combined dispersion with silver halide emulsion

wherein said dispersion of photographic coupler is prepared without using a colloid mill or homogenizer.

5,008,180

PHOTOGRAPHIC RECORDING MATERIAL CONTAINING A CYAN DYE-FORMING COUPLER

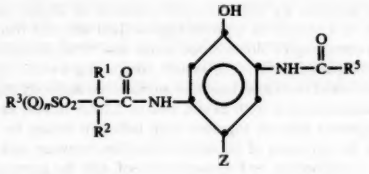
Paul B. Merkel, and David Hoke, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 335,166, Apr. 7, 1989, abandoned. This application Feb. 2, 1990, Ser. No. 474,566

Int. Cl.[5] G03C *1/08, 7/34*

U.S. Cl. 430—552 **9 Claims**

1. A photographic recording material comprising a support and a photosensitive silver halide emulsion which has associated therewith a cyan dye-forming coupler compound having the structural formula:



wherein:

R^1 is an unsubstituted or a substituted, straight or branched chain alkyl group having from 1 to about 20 carbon atoms, an unsubstituted or a substituted cycloalkyl group having from 3 to about 8 carbon atoms in the ring or an unsubstituted or a substituted aryl group;

R^2 is as defined for R^1 or is hydrogen;

R^3 is an unsubstituted or a substituted alkyl group having from 1 to about 24 carbon atoms, an unsubstituted or substituted cycloalkyl group having from 3 to about 8 carbon atoms in the ring, an unsubstituted or a substituted aryl group having from 6 to about 24 carbon atoms or an unsubstituted or a substituted heterocyclic group having from 3 to about 8 atoms in the heterocyclic ring, wherein the hetero ring atoms can be nitrogen, oxygen, or sulfur;

with the proviso that when R^3 is a primary alkyl group R^1 must contain at least 2 carbon atoms;

Q is —O— or —NR^4—;

R^4 is hydrogen; an unsubstituted or a substituted alkyl group having from 1 to about 24 carbon atoms; and unsubstituted or a substituted cycloalkyl group having from 3 to about 8 carbon atoms in the ring; or an unsubstituted or a substituted aryl group having from 6 to about 24 carbon atoms;

R^5 is an unsubstituted or a substituted linear or branched chain alkyl group having from 1 to about 32 carbon atoms;

n is 0 or 1; and

Z is hydrogen or a coupling off group;

with the proviso that at least one of the R^1, R^2, R^3, R^4, R^5 or Z groups is of such size and configuration as to render the coupler compound substantially nondiffusible in the layer of the photographic recording material in which it is coated.

5,008,181

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Akihiko Ikegawa; Masaki Okazaki, and Tadao Sugimoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Tokyo, Japan

Filed Sep. 26, 1988, Ser. No. 248,747

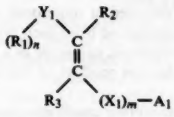
Claims priority, application Japan, Sep. 25, 1987, 62-239034

The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.

Int. Cl.[5] G03C *1/28, 1/29*

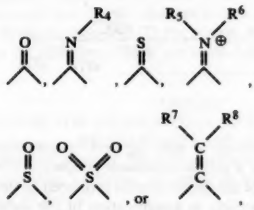
U.S. Cl. 430—572 **8 Claims**

1. A silver halide photographic material comprising a support having thereon at least one silver halide emulsion layer spectrally sensitized by at least one adsorptive spectral sensitizing dye, wherein the emulsion layer or a hydrophilic colloid layer adjacent to the emulsion layer contains at least one compound represented by the following formula (I);



(I)

wherein R_1 represents a hydrogen atom or a group which may be substituted; R_2, and R_3 each independently represents a hydrogen atom, a halogen atom or a group which may be substituted; said R_1 and R_2 or said R_1 and R_3 may combine with each other to form a carbon ring or a heterocyclic ring; Y_1 represents



wherein R_4, R_5, R_6, R_7 and R_8 each independently represents a hydrogen atom or a group which may be substituted, a cyano group, or a nitro group; A_1 represents a light-collecting dye moiety selected from a cyanine dye moiety or a merocyanine dye moiety and which has an absorption maximum in a region of 3000 n.m. or longer, and which simultaneously satisfies the following factors (1) and (2), and is bonded to X_1 or the carbon atom through the hetero atom of A_1; X_1 represents a divalent linkage group bonded to the carbon atom through the hetero group of X_1; and m and n each represents 0 or 1; wherein said compound of formula (I) is capable of releasing the light collecting dye by the addition of a nucleophilic agent to the unsaturated bond of the compound of formula (I) on photographic processing;

(1) the luminous quantum yield of the dye is at least 0.001 at room temperature at a concentration of 10^{-4} mole/dm^3 in dry gelatin, and

(2) the dye has a luminous zone at least partially overlapping with the optical adsorption zone of the adsorptive spectral sensitizing dye adsorbed in silver halide.

5,008,182

DETECTION OF AIDS ASSOCIATED VIRUS BY POLYMERASE CHAIN REACTION

John J. Sninsky, El Sobrante; Shirley Y. Kwok, San Ramon, and David H. Mack, Berkeley, all of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Continuation of Ser. No. 935,581, Nov. 26, 1986, abandoned, which is a continuation-in-part of Ser. No. 818,127, Jan. 10, 1986, abandoned. This application Aug. 15, 1989, Ser. No. 394,276

Int. Cl.[5] C12Q *1/70, 1/68;* **G01N** *33/566;* **C07H** *15/12*

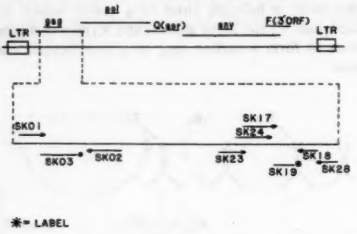
U.S. Cl. 435—5 **38 Claims**

1. A process for detecting or monitoring a nucleic acid sequence to the nucleic acids in AIDS viruses, which AIDS virus nucleic acid sequence is suspected of being contained in a sample, which process comprises:

(a) treating the sample with two oligonucleotide primers, four different nucleoside triphosphates, and an agent for polymerization, under hybridizing conditions, which primers are sufficiently complementary to substantially conserved regions among the nucleic acid sequences of AIDS viruses to hybridize therewith, such that for each

strand of the AIDS virus nucleic acid sequence an extension product of each primer is synthesized which is substantially complementary to a strand of the AIDS virus nucleic acid sequence being detected or monitored, such that the extension product synthesized from each primer, when separated from its complement, can serve as a template for syntheses of the extension product of the other primer;

(b) treating the sample under denaturing conditions to separate the primer extension products from their templates;



(c) treating the product of step (b) with oligonucleotide primers such that a primer extension product is synthesized using each of the single strands produced in step (b) as a template, resulting in amplification of the sequence specific to the nucleic acids in AIDS viruses;

(d) repeating steps (b) and (c) to synthesize detectable amounts of said AIDS virus nucleic acid sequence if present in said sample, providing an amplified nucleic acid sequence; and

(e) determining if amplification has occurred.

5,008,183

ASSAY SYSTEM FOR DETECTING ANTIBODY AND A METHOD OF PRODUCING NON-HUMAN IMMUNE ANTIBODY

Kurt B. Osther, Dallas, Tex., assignor to Bio-Research Laboratories, Inc., Dallas, Tex.

Filed May 10, 1988, Ser. No. 192,241

Int. Cl.[5] G01N *33/569*

U.S. Cl. 435—5 **12 Claims**

1. In an assay for detecting the presence or absence of a human antibody which binds to an antigen of a virus or a bacteria, comprising the steps of:

(a) contacting a sample of the antigen with a test sample of human biological fluid for times and under conditions sufficient for the antigen and any antibody present in the human biological fluid to form antigen-antibody complexes;

(b) at the same time contacting another sample of the antigen with a positive control comprising a procine antibody to the antigen under the same times and conditions as in step (a), said times and conditions being sufficient for the antigen and the non-human antibody in the positive control to form antigen-antibody complexes; and

(c) detecting the formation of any antigen-antibody complexes in steps (a) and (b) by simultaneously contacting an anti-human antibody with any antigen-antibody complex as formed, for times and under conditions sufficient for any antigen-antibody complexes formed in step (a) and step (b) to react with the anti-human antibody.

5,008,184

KIT OR SYSTEM FOR DETECTING SIMA AND/OR LIMA ANTIGENS IN PHYSIOLOGICAL FLUID

Anthony W. Linnane, Camberwell, Australia, assignor to Mucan Diagnostics Pty. Ltd., Victoria, Australia

Division of Ser. No. 860,223, filed as PCT·AU85/00136 on Jun. 21, 1985, published as WO86/00414 on Jan. 16, 1986, Pat. No. 4,818,682

This application Nov. 14, 1988, Ser. No. 270,765

Claims priority, application Australia, Jun. 25, 1984, PG5672

Int. Cl.[5] C12Q *1/00*; G01N *33/53*

U.S. Cl. 435—7.23 **4 Claims**

1. An in vitro diagnostic kit or system for detecting the presence in a patient of cancer cells or other cells producing mucin antigens by detecting the presence of SIMA and/or LIMA in a sample of a physiological fluid selected from the group consisting of blood, blood serum and blood plasma taken from the patient, said kit or system comprising a solid support having linked thereto at least one monoclonal antibody capable of immunoreaction with SIMA and/or LIMA in said sample, or fragments thereof, together with indicator means for indicating the presence of an immunoreaction between said antibody or antibodies, or fragments thereof, and the corresponding antigen(s) in said sample, said support allowing for the application of physiological fluid to be tested.

5,008,185

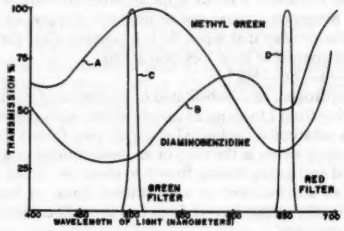
METHODS AND APPARATUS FOR THE QUANTITATION OF NUCLEAR PROTEINS

James W. Bacus, Hinsdale, Ill., assignor to Cell Analysis Systems, Inc., Lombard, Ill.

Continuation-in-part of Ser. No. 794,937, Nov. 4, 1985, Pat. No. 4,741,043. This application Oct. 6, 1987, Ser. No. 106,717

Int. Cl.[5] C12Q *1/00*; G01N *33/53*

U.S. Cl. 435—7.23 **32 Claims**



1. A method for measuring a nuclear antigen in a tissue sample containing cells with an immunohistochemical technique using an antibody to said nuclear antigen and a microscopic digital image measuring means, said method comprising the steps of:

staining the sample with an immunohistochemical technique to optically enhance and to stain nuclear antigens with a first spectral stain material which varies with the quantity of the nuclear antigen contained in the sample,

optically enhancing the sample with a second spectral stain material which optically enhances nuclear material in the cells,

measuring the optically-enhanced nuclear material with a microscopic digital image measuring means at a first wavelength range which allows identification of all of the enhanced nuclear material,

measuring the optically-enhanced antigen with the microscopic digital image measuring means at a second wavelength range which substantially excludes the optically-enhanced nuclear material, and

quantitating the nuclear antigen using the measurements made.

5,008,186

DETECTION OF UNIQUE CHLAMYDIA STRAIN ASSOCIATED WITH ACUTE RESPIRATORY DISEASE

J. Thomas Grayston; Cho-chou Kuo, both of Seattle, and San-pin Wang, Redmond, all of Wash., assignors to The Board of Regents of the University of Washington, Seattle, Wash.

Continuation of Ser. No. 281,913, Dec. 7, 1988, abandoned, which is a continuation of Ser. No. 858,380, May 1, 1986, abandoned. This application Apr. 30, 1990, Ser. No. 517,390

Int. Cl.[5] G01N *33/53, 33/566;* C12N *15/08;* C07K *15/28*

U.S. Cl. 435—7.36 29 Claims

7. A method for detecting the presence of the TWAR strain of chlamydia, *Chlamydia pneumoniae,* in a biological sample, comprising:

exposing a biological sample suspected of containing the TWAR strain to a monoclonal antibody specific for elementary bodies of the TWAR strain; and

detecting the presence of immunocomplexes formed between the monoclonal antibody and the TWAR strain.

5,008,187

ANTIFUNGAL FERMENTATION PRODUCT

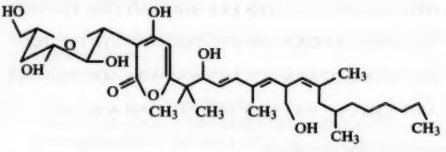
Louis Chaiet; Sheldon B. Zimmerman, both of Springfield; Richard L. Monaghan, Somerset, and George M. Garrity, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 1, 1988, Ser. No. 278,385

Int. Cl.[5] C12P *19/00, 17/00;* A61K *31/70;* C13K *13/00*

U.S. Cl. 435—72 6 Claims

1. An antifungal antibiotic compound having the formula



5,008,188

PROCESS FOR PRODUCING S-ADENOSYL-L-HOMOCYSTEINE

Hideaki Yamada; Yoshiki Tani; Sakayu Shimizu, all of Kyoto, and Shozo Shiozaki, Kawasaki, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 578,769, Feb. 9, 1984, abandoned. This application Nov. 4, 1987, Ser. No. 117,439

Claims priority, application Japan, Feb. 10, 1983, 58-28807

The portion of the term of this patent subsequent to Aug. 12, 2003, has been disclaimed.

Int. Cl.[5] C12P *14/40, 13/12, 19/18*

U.S. Cl. 435—88 17 Claims

1. A process for producing S-adenosyl-L-homocysteine, which comprises reacting adenosine with homocysteine by contacting them in an aqueous medium in the presence of cells, crushed cells or a cell-free extract of a microorganism having the ability to synthesize S-adenosyl-L-homocysteine from adenosine and homocysteine, wherein the microorganism is *Enterobacter cloacae* IFO 13535, *Streptoverticillium kentuchense* IFO 12880, *Micropolyspora angiospora* IFO 13155, or *Microellobospor violacea* IFO 12517, and collecting the synthesized S-adenosyl-L-homocysteine.

5,008,189

ENHANCED MEMBRANE SEPARATION OF MONOSACCHARIDES UTILIZING CONCENTRATION POLARIZATION

Anil R. Oroskar, Downers Grove, and James L. Johnson, Des Plaines, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 895,115, Aug. 11, 1986. This application Jun. 20, 1989, Ser. No. 369,433

Int. Cl.[5] C12P *19/02, 19/20;* B01D *61/00, 61/14*

U.S. Cl. 435—105 13 Claims

1. In the separation of monosaccharides from an aqueous stream containing a mixture of monosaccharides, disaccharides, trisaccharides, higher oligosaccharides, and a saccharifying enzyme by flowing the stream over a membrane through a channel and collecting the permeate enriched in monosaccharide, the improvement consisting of performing the separation under conditions where the flowing stream is characterized by a Reynolds number from about 20 to about 200 subject to the constraints that (1) the channel height is between about 0.02 and about 0.2 cm, and (2) the stream has a velocity between about 0.1 and about 2 feet per second.

5,008,190

METHOD FOR PRODUCTION OF L-PHENYLALANINE BY RECOMBINANT *E. COLI*

Sae Bae Lee; Chan H. Won; Chung Park, and Bun S. Lim, all of Seoul, Rep. of Korea, assignors to Miwon Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 13, 1987, Ser. No. 120,461

Claims priority, application Rep. of Korea, Mar. 26, 1987, 87-2816

Int. Cl.[5] C12P *13/22;* C12N *15/52, 1/21, 15/70*

U.S. Cl. 435—108 13 Claims

1. The *E. coli* MWPEC 13-60 (ATCC 67459) which has an optimum phenylalanine production capability at a temperature of 30° to 32° C.

5,008,191

MACROLIDE COMPOUNDS, THEIR PREPARATION AND THEIR USE

Takao Okazaki; Shuji Takahashi; Seigo Iwado, all of Tokyo; Keiji Tanaka, Shiga; Toshiaki Yanai, Shiga, and Hisaki Kajino, Shiga, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

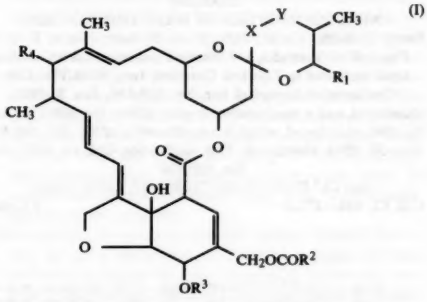
Filed Dec. 10, 1987, Ser. No. 131,413

Claims priority, application Japan, Dec. 11, 1986, 61-295452

Int. Cl.[5] C12P *17/08;* C12N *1/20;* A61K *31/335*

U.S. Cl. 435—124 7 Claims

1. A culture of *Streptomyces hygroscopicus* subsp *aureolacrimosus* SANK 60286 FERM BP-1190 which, when cultured, produces recoverable amounts of a compound of formula (I)



(I)

wherein X is CH_2; Y is CH_2; R^1 is methyl or ethyl; R^2 is isobutyl, 2-methyl-1-propenyl or 2-methyl-1-butenyl; and R^3 and R^4 are both hydrogen.

5,008,192

ENZYMATIC PROCESS FOR THE PREPARATION OF OPTICALLY ACTIVE CYANOHYDRINS

Uwe Neidermeyer, Walberberg; Udo Kragl, Juelich; Maria R. Kula, Hambach-Neiderzier; Christian Wandrey, Juelich; Kyriakos Makrylaleas, and Karlheinz Drauz, both of Freigericht, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Juelich GmbH, Juelich and Degussa Aktiengesellschaft, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Jan. 30, 1989, Ser. No. 303,336

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1988, 3802624; Jul. 14, 1988, 3823864

Int. Cl.[5] C12P *13/00*

U.S. Cl. 435—128 27 Claims

1. In a process for the preparation of an optically active (R)-cyanohydrin, which comprises the steps of reacting an aliphatic, aromatic or heteroaromatic aldehyde or ketone with hydrocyanic acid, in the presence of (R)-oxynitrilase and recovering resultant (R)-cyanohydrin, the improvement wherein said (R)-oxynitrilase is (R)-oxynitrilase (4.1.2.10) and the process is carried out in an aqueous medium, under acid conditions and at a temperature range of about −5° C. to +50° C. such that the amount of reactant undergoing a competing chemical reaction and racemization is significantly less than the amount of reactant undergoing the enzymatic synthesis, whereby said recovered resultant (R)-cyanohydrin has an improved optical purity.

5,008,193

ASCORBIC ACID INTERMEDIATES AND PROCESS ENZYMES

Stephen Anderson; David R. Light, both of San Mateo; Cara Marks, San Francisco, and William H. Rastetter, Rancho Santa Fe, all of Calif., assignors to Genentech, Inc., So. San Francisco, Calif.

Continuation-in-part of Ser. No. 620,585, Jun. 14, 1984, abandoned, which is a continuation-in-part of Ser. No. 508,410, Jun. 28, 1983, abandoned. This application May 21, 1987, Ser. No. 53,290

The portion of the term of this patent subsequent to Jul. 12, 2005, has been disclaimed.

Int. Cl.[5] C12P *7/60, 19/34;* C12N *9/04, 15/00, 1/00, 1/13*

U.S. Cl. 435—138 12 Claims

1. A process for converting glucose to 2-KLG which process comprises culturing in a medium containing glucose under suitable metabolic conditions, bacterial cells to which genetic material has been transferred wherein the transfer of said genetic material renders a bacterial host cell capable of converting glucose to 2,5-DKG but lacking the ability to convert 2,5-DKG to 2-KLG, capable of converting 2,5-DKG into 2-KLG.

5,008,194

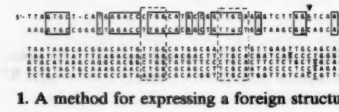
NIFH PROMOTERS OF BRADYRHIZOBIUM

Barry G. Rolfe, Curtin; John Shine, Sydney; Kieran F. Scott, Page, all of Australia, and Hauke Hennecke, Zurich, Switzerland, assignors to Lubrizol Genetics, Inc., Wickliffe, Ohio

Continuation-in-part of Ser. No. 618,439, Jun. 8, 1984, abandoned, and a continuation-in-part of Ser. No. 900,270, Aug. 26, 1986, abandoned, which is a continuation of Ser. No. 506,676, Jun. 22, 1983, abandoned. This application Oct. 16, 1987, Ser. No. 109,869

Int. Cl.[5] C12N *15/00;* C12R *1/41;* C07H *15/12*

U.S. Cl. 435—172.3 7 Claims



1. A method for expressing a foreign structural gene under control of a promoter capable of activating a nifH gene in a nodule selected from the group consisting of:

(1) the sequence of the Bradyrhizobium sp. (Parasponia) nifH promoters as follows:

5'. . . CCG CGC AGA TCC TGT CCG GTG CAA ACC TCC

CTG GGG TAG CTC AGC GGC TCG TTG GCT TTT TAG

AGC GTA ATC AAG AAG CTT AAT AAG CGC GGA CAG

TGT TGG CAT GGC GAT TGC TGT TGA GTT GCA GCA

ACA CTG AGT GAG GGC TGG GTG CAC GCC GAC GCG

TAA GAC GAG CGA TGC GCT CCT TCC CTT GAA CCC

GTG TGC CCC GTT TCT GAG AGA GAA ACA AGC TCG

CGT GTC GGA AGC ACG CAA CTT TTG GCA AAT CGG

TTG ATG GAG AAC AAC ATG . . . 3'; and

(2) the sequence of the *Bradyrhizobium japonicum* nifH regulatory region as follows:

5'. . . TTT GGC TGT TGG CGT TCA TGT TTG CGA TTG

TTT GTT CGT TGT CTG ACA GCC GGG CAG ATC TTG

TCA GAT CCA AAA CAG CCT ACG ATC GCG CGC CGG

CTG GTT GCT TTT GGA AAC GTA ATC AGA AGC TTA

AGG TGC CGG GTT AGA CCT TGG CAC GGC TGT TGC

TGA TAA GCG GCA GCA ACA CTG AGT GAG GGC TGA

GTG CAC GCC GAC GTG TAA GGC GAG CGA TGC GCT

CCT TCC CTT GAA CCC GTG TGC CCC CGT TTC TGC

GAG GGA AGC AAA GCT CGC AAA AGA AGC GCG CAA

CGT TTG GCA AAT CGG TTG ATG GAG AGC AGC . . . 3';

which method comprises:

(a) introducing a DNA molecule comprising a foreign structural gene under control of said promoter into a rhizobial strain capable of forming nodules on a plant; and

(b) infecting a plant with said rhizobial strain wherein nodules are formed and expression of mRNA or protein coded by said foreign structural gene occurs within said nodules.

5,008,195

SOME NOVEL PRODUCERS OF CYCLODEXTRIN GLYCOSYLTRANSFERASES

Paul Allenza, Bartlett, Ill.; Christy G. Clifft, San Mateo, Calif., and Marie J. Morrell, Des Plaines, Ill., assignors to UOP, Des Plaines, Ill.

Filed Aug. 5, 1988, Ser. No. 228,411

Int. Cl.[5] C12N *9/10, 1/20, 1/00*

U.S. Cl. 435—193 4 Claims

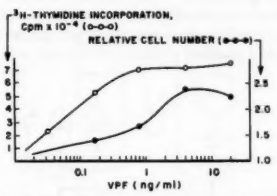
4. A method of producing a cyclodextrin glycosyltransferase comprising growing aerobically Bacillus sp. NRRL B-18373, B-18374 or Pseudomonas sp. NRRL B-18375 in a medium containing an assimilable source of carbon, nitrogen, and mineral nutrients, at a temperature from about 20° to about 45° C., and recovering the cyclodextrin glycosyltransferase produced thereby.

5,008,196

STIMULATION OF ENDOTHELIAL CELL GROWTH

Daniel T. Connolly, Manchester, and Joseph Feder, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 21, 1987, Ser. No. 87,739
Int. Cl.[5] C12N 5/00; A61K 37/00; C07K 7/00
U.S. Cl. 435—240.2 1 Claim



1. The method of stimulating endothelial cell growth in vitro comprising subjecting said cells to a growth stimulating amount of a highly purified vascular permeability factor having the following characteristics of guinea pig VPF:

(a) it has a M_r about 34,000–40,000 as determined by sodium dodecylsulfate polyacrylamide gel electrophoresis;

(b) it is a disulfide-linked protein dimer;

(c) it has a N-terminal amino acid sequence as follows:

1 5 10 15
AlaProMetAlaGluGlyGluGlnLysProArgGluValValLys

16 20 25 30
PheMetAspValTyrLysArgSerTyrCysArgProIleGluMet

31 35
LeuValAspIlePheGln; and

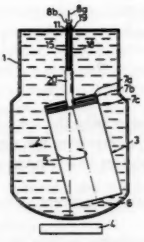
(d) it exhibits substantial mitogenic activity to endothelial cells in culture.

5,008,197

PROCESS AND A DEVICE FOR IMPROVED OXYGENATION OF BIOLOGICAL CULTURES

Ivar Wergeland, Granitvägen 19B, S-75243 Uppsala; Ingeborg C. Senstad, Ornevn. 51, N-1340 Bekkestua, both of Norway, and Eirik Nestaas, 70 High Rock Ter., Newton, Mass. 02167

Continuation of Ser. No. 758,667, Jul. 9, 1985, abandoned. This application Apr. 27, 1989, Ser. No. 343,662
Claims priority, application Sweden, Nov. 10, 1983, 8306190
Int. Cl.[5] C12N 5/02; C12M 3/02
U.S. Cl. 435—240.24 9 Claims



1. In a process for the oxygenation of biological cultures, comprising the steps of providing a liquid suspension of a biological culture in a closed reaction vessel and agitating said liquid suspension by means of a mechanical stirrer while supplying oxygen to said biological culture so as to promote the growth thereof, the improvement comprising supplying oxygen to said culture through at least one oxygen-permeable membrane carried by said stirrer, which is in direct contact with said liquid suspension.

5,008,198

MEROZOITE SURFACE GLYCOPROTEINS

Robert T. Reese, San Diego, and Harold A. Stanley, La Jolla, both of Calif., assignors to Scripps Clinic and Research Foundation, La Jolla, Calif.

Division of Ser. No. 650,810, Sep. 14, 1984, Pat. No. 4,835,259. This application May 30, 1989, Ser. No. 358,663
Int. Cl.[5] C12N 5/00; A61K 35/14; C07K 3/00, 13/00
U.S. Cl. 435—240.27 2 Claims

1. A hybridoma cell line that produces monoclonal antibodies that bind to a merozoite surface glycoprotein of approximate molecular weight 56,000 that is present in the Geneva and FVO isolates of *Plasmodium falciparum*, said hybridoma cell line having the ATCC accession number HB 8938.

5,008,199

HYBRIDOMA CELL LINE AND MONOCLONAL ANTIBODIES TO *TREPONEMA DENTICOLA* ATCC 33520

Dou-Mei Wang, Randolph; Linda D. Sturdivant, East Orange; Thomas A. Biemer, Mine Hill, all of N.J., and Ronald Mink, Wilbraham, Mass., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 19, 1987, Ser. No. 123,014
Int. Cl.[5] C12N 5/00
U.S. Cl. 435—240.27 5 Claims

1. A hybridoma cell-line capable of producing antibody IgG_3 to *Treponema denticola* TCC 33520, wherein the cell line is formed by fusing a nonsecreting mouse myeloma cell with a spleen cell from a mouse immunized with cell fragments of the spirochete Treponema denticola ATCC 33520.

5,008,200

PROPAGATING MULTIPLE WHOLE FERTILE PLANTS FROM IMMATURE LEGUMINOUS

Jerome P. Ranch, and Julie A. Buchheim, both of Champaign, Ill., assignors to United AgriSeeds, Inc., Savoy, Ill.

Continuation-in-part of Ser. No. 860,979, May 8, 1988, abandoned. This application May 23, 1988, Ser. No. 197,355
Int. Cl.[5] C12N 5/00
U.S. Cl. 435—240.49 23 Claims

1. A method of producing seeds from multiple whole fertile plants, said method comprising the steps of:

(a) culturing aseptic cotyledonary tissue on a culturing media to form immature somatic embryos, said aseptic cotyledonary tissue being of Glycine max or Glycine soja or hybrid thereof, in the form of whole zygotic embryo with cotyledons 4 to 8 in length for Glycine max or hybrid and 1 to 4 mm in length for Glycine soja or in the form of cotyledons excised from said embryo or from derivation product of said cotyledonary tissue, said culture media comprising a synthetic auxin in a concentration of from about 20 to about 40 ppm, said synthetic auxin being selected from the group consisting of 2,4,5-trichlorophenoxyacetic acid, para-chlorophenoxyacetic acid, 2-methyl-4-chlorophenoxyacetic acid, and 2,4-dichlorophenoxyacetic acid; and

(b) incubating the immature somatic embryo isolated from a step (a) on a maturation medium for a length of time sufficient to reduce the water content of the somatic embryo by an amount effective to bring about an increased conversion vigor, said maturation medium comprising 6% to about 12% sucrose to foster development of the immature somatic embryos into mature somatic embryos possessing well-formed cotyledons and radicle.

5,008,201

SIMULATED HUMAN PLATELETS FROM RED BLOOD CELLS

Wayne L. Ryan, Omaha, Nebr., assignor to Streck Laboratories, Inc., Omaha, Nebr.

Filed May 24, 1990, Ser. No. 527,828
Int. Cl.[5] G01N *31/00, 33/48*
U.S. Cl. 436—10 **5 Claims**

1. A method of preparing lysable, blood platelet reference control comprising treating animal red blood cells larger than or within the size range of human blood platelets with a fixing agent for red blood cells for a time sufficient to partially rigidify the red blood cell membrane enabling dividing said shrunk red blood cells into distinct groups and shrinking to a permanently shrunk condition, subjecting said distinct groups of said partially fixed red blood cells to hemolysis with a hemolytic agent to partially remove hemoglobin therefrom, the hemolysis of each distinct group of cells removing a different amount of hemoglobin, subjecting the resulting red blood cells to centrifugation to collapse the red blood cell membrane around the hemoglobin remaining in said cells, said distinct group of cells and the extent of hemolysis being selected so as to provide after said centrifugation a mixture of permanently shrunken lysable cells that simulate in number, size and volume distribution the platelets present in human whole blood.

5,008,202

BLOOD DILUENT FOR RED BLOOD CELL ANALYSIS

Sherburne M. Edmondson, Sunnyvale, and Carlos E. Luna, Campbell, both of Calif., assignors to Sequoia Turner Corporation, Mountain View, Calif.

Filed Nov. 29, 1988, Ser. No. 277,334
Int. Cl.[5] G01N *31/00*
U.S. Cl. 436—18 **6 Claims**

1. A blood diluent useful in analysis of red blood cell number, and the enumeration of white blood cell populations and sub-populations in a whole blood sample, said diluent comprising an aqueous solution of:

(a) sodium sulfate;
(b) sodium chloride;
(c) 1, 3 dimethylurea;
(d) 1-hydroxypyridine-2-thione;
(e) EDTA;
(f) ADA Buffer; and,
(g) sodium hydroxide to obtain pH 6.9,

wherein said diluent is an electrolyte capable of conducting current, stabilizing red blood cell volumes and having no adverse effect on white blood cells.

5,008,203

METHOD FOR THE DETERMINATION OF OXYGEN DEMAND IN SULFUR RECOVERY INSTALLATIONS

Manfred Mathews, Bad Nauheim, Fed. Rep. of Germany, assignor to Ametek, Inc., Pittsburgh, Pa.

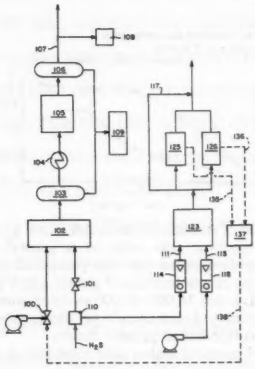
Continuation-in-part of Ser. No. 629,172, Jul. 9, 1984, abandoned. This application Aug. 2, 1988, Ser. No. 227,772
Int. Cl.[5] G01N *35/00*
U.S. Cl. 436—55 **2 Claims**

1. In the method for the combustion of hydrogen sulfide containing gas mixtures for sulfur recovery and gas purification by burning the gas mixture in a furnace with oxygen, wherein the improvement comprises;

(1) continuously and rapidly predetermining and monitoring the oxygen demand of the gas mixture by continuously removing a sample of the gas mixture before being fed into the furnace and rapidly feeding the sample into a second test furnace with at least a stoichiometric amount of oxygen and completely burning the sample of the gas mixture;

(2) continuously analyzing the resulting burned sample gas mixture by passing the burned mixture into analysis instruments that measure the oxygen and sulfur dioxide content of the burned sample mixture, said instrument each generating an output signal;

(3) feeding the output signals to a computer which uses the output signals independently to calculate and generate an output signal indicative of the amount of oxygen needed for the burning of the gas mixture and



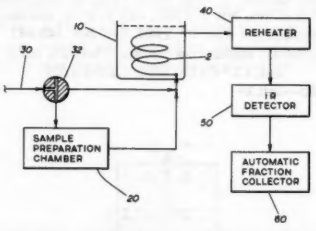
(4) controlling a regulator that feeds oxygen to the furnace for the burning of the gas mixture by having the regulator receive the output signal from the computer thereby accurately regulating the amount of oxygen being fed to the furnace for the complete combustion of the gas mixture.

5,008,204

METHOD FOR DETERMINING THE COMPOSITIONAL DISTRIBUTION OF A CRYSTALLINE COPOLYMER

Ferdinand C. Stehling, Baytown, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Feb. 2, 1988, Ser. No. 151,350
Int. Cl.[5] G01N *25/00, 30/02, 31/02, 33/44*
U.S. Cl. 436—85 **11 Claims**



1. A method for determining the solubility distribution of a crystalline copolymer, comprising the steps of:

dissolving the copolymer in a solvent at elevated temperature;

filling a column with the solvent containing the dissolved copolymer;

crystallizing the copolymer within the column by reducing the temperature of the column to below ambient temperature;

passing pure solvent through the column at an increasing column temperature to gradually dissolve the copolymer; and

continuously measuring the concentration of the copolymer in the solvent exiting the column.

5,008,205

METHOD OF FACILITATING DETECTION OF AMINO ACID DERIVATIVES WITH ENHANCED SENSITIVITY

Marcus J. Horn, Arlington, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 10, 1988, Ser. No. 230,580
Int. Cl.[5] G01N *33/68*
U.S. Cl. 436—89 14 Claims

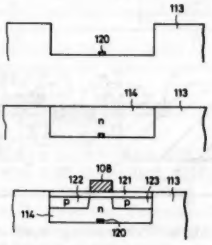
1. A method of enhancing the detectability of an amino acid in order to facilitate identification, comprising the steps of converting the amino acid to a 5-thiazolinone amino acid derivative and reacting the derivative with a mixture of an anhydrous acid and an alcohol to primarily produce a thiocarbamyl amino acid ester.

5,008,206

METHOD FOR MAKING A PHOTOELECTRIC CONVERSION DEVICE USING AN AMORPHOUS NUCLEATION SITE

Mahito Shinohara, Tokyo, and Takao Yonehara, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 70,777, Jul. 7, 1987, abandoned. This application May 24, 1989, Ser. No. 357,635
Claims priority, application Japan, Jul. 11, 1986, 61-162128
Int. Cl.[5] H01L *21/20, 31/18*
U.S. Cl. 437—3 6 Claims



1. A method for forming a photoelectric conversion apparatus comprising a semiconductor substrate provided with a photoresponsive transistor, the photoresponsive transistor having an emitter region, a collector region, and a base region, the base region being allowed to float to store therein photoexcited carriers; the method comprising the steps of:

forming an electrically insulating layer disposed on said semiconductor substrate;

forming an amorphous nucleation surface on the electrically insulating layer, wherein the nucleation surface has a nucleation density larger than that of the surface of the electrically insulating layer;

forming a semiconductor region corresponding to the nucleation surface by a vapor deposition, wherein the nucleation surface is sufficiently fine to permit the semiconductor region to be formed as a single crystal; and

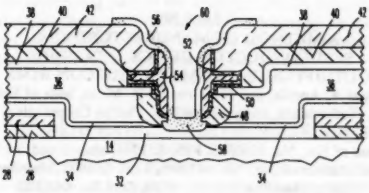
forming a semiconductor switching means within the semiconductor region for setting a potential of the base region at a predetermined level.

5,008,207

METHOD OF FABRICATING A NARROW BASE TRANSISTOR

Jeffrey L. Blouse, Stanfordville; Inge G. Fulton, Washingtonville; Russell C. Lange, Newburgh; Bernard S. Meyerson, Yorktown Heights; Karen A. Nummy, Newburgh; Martin Revitz, Poughkeepsie, and Robert Rosenberg, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 11, 1989, Ser. No. 405,508
Int. Cl.[5] H01L *21/00*
U.S. Cl. 437—31 33 Claims



27. A method of forming a vertical bipolar transistor comprising the steps of:

providing a substrate of semiconductor material including a first device region of a first conductivity type;

forming a first layer of second conductivity type epitaxial semiconductor material over said first device region;

forming a second layer of second conductivity type epitaxial semiconductor material over said first layer, said second layer having a relatively higher dopant concentration than said first layer;

forming a third layer of protective material over said second layer;

etching said third layer to expose a portion of said second layer;

oxidizing the exposed portion of said second layer through to said first layer;

removing the oxidized portion of said second layer to expose a portion of said first layer;

forming a spacer of insulating material on the exposed edge of said second layer;

forming a second region of said first conductivity type in the surface of said exposed portion of said first layer; and

heating said substrate to drive dopant from the remaining portions of said second layer into said first layer;

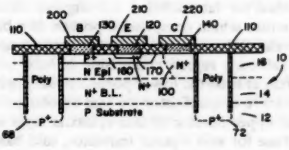
whereby to form a vertical bipolar transistor.

5,008,208

METHOD OF MAKING PLANARIZED, SELF-ALIGNED BIPOLAR INTEGRATED CIRCUITS

Michael S. Liu, Bloomington, and Huang-Joung Chen, Maple Grove, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 7, 1988, Ser. No. 281,195
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—31 17 Claims



1. A method of making a bipolar integrated circuit structure comprising the steps of:

(a) forming three implantation openings in a layer of insulat-

ing material on the upper surface of a semiconductor substrate;

(b) selectively forming a polysilicon layer in each implantation opening formed in the insulating material layer by selective epitaxial growth;

(c) implanting into each polysilicon-filled opening a doping material capable of diffusing into the substrate material below each said polysilicon-filled opening; and

(d) etching the upper surface of each polysilicon-filled opening formed in the insulating material layer such that the upper surface of the semiconductor structure is substantially planarized.

5,008,209

A METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE INCLUDING OUTDIFFUSION FROM POLYSILICON RIMS

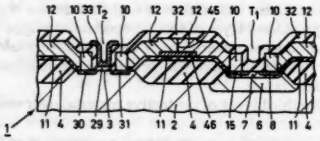
Johannes A. Appels, and Henricus G. R. Maas, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 828,076, Feb. 3, 1986, abandoned, which is a continuation of Ser. No. 447,845, Dec. 8, 1982, abandoned. This application Jan. 10, 1990, Ser. No. 463,183

Claims priority, application Netherlands, Dec. 31, 1981, 8105920

Int. Cl.[5] H01L *21/225*

U.S. Cl. 437—31 **6 Claims**



1. A method of manufacturing a semiconductor device of a bipolar transistor characterized in that the starting member is a semiconductor body comprising an insulating layer which is present on a surface and in which at least an opening is provided while a layer pattern is formed which extends at least as far as an edge of the opening, whereupon at least at the area of the opening a layer is provided on the semiconductor body and on the layer pattern consisting of a material which is subjected impurities in the semiconductor body determining the first conductivity type diffuse through another part of the rim into the semiconductor body in order to form an emitter zone.

5,008,210

PROCESS OF MAKING A BIPOLAR TRANSISTOR WITH A TRENCH-ISOLATED EMITTER

Shang-yi Chiang, Walnut Creek; Wen-Ling M. Huang, Milpitas; Clifford I. Drowley, and Paul V. Voorde, both of Mountain View, all of Calif., assignors to Hewlett-Packard Compnay, Palo Alto, Calif.

Division of Ser. No. 307,876, Feb. 7, 1989. This application Apr. 18, 1990, Ser. No. 510,637

Int. Cl.[5] H01L *21/331*

U.S. Cl. 437—33 **7 Claims**

5. A method for fabricating a self-aligned, trench-isolated emitter structure which comprises a portion of a bipolar transistor, wherein said emitter structure is formed upon a semiconductor substrate region comprising at least one epitaxial layer, wherein at least the lower portion of said epitaxial layer is doped to serve as a collector for said bipolar transistor, and wherein the upper portion of said epitaxial layer is doped to serve as a base for said bipolar transistor, said base being divided into a relatively lightly-doped intrinsic base adjacent to said emitter structure and a relatively heavily-doped extrinsic base isolated from said emitter structure by a dielectric-filled trench, said method comprising the steps of:

(a) forming a first layer of conductive material over said semiconductor substrate region;

(b) implanting a base-type dopant into said first layer of conductive material;

(c) driving said base-type dopant into said epitaxial layer directly underlaying said first layer of conductive material so that said base-type dopant is adjacent to the portion of said epitaxial layer which serves as said collector;

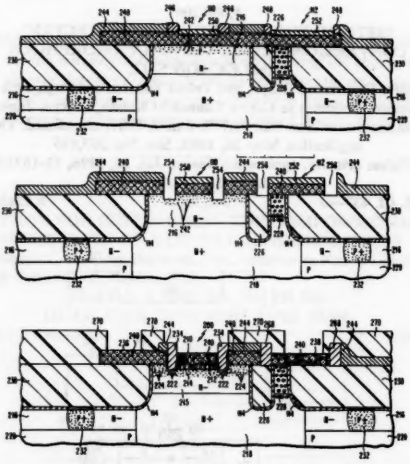
(d) depositing a thin layer of silicon nitride over the surface of said layer of conductive material;

(e) depositing a second layer of conductive material over said layer of silicon nitride;

(f1) depositing a dielectric material upon said second layer of conductive material;

(f2) forming an aperture in said dielectric material over an area surrounded by an intended extrinsic base area, said aperture having a sidewall;

(f3) forming a sidewall spacer structure surrounding an intended emitter area and positioned upon the surface of said layer of conductive material, said sidewall spacer structure being formed on said sidewall;



(g) creating an etch-masking layer on the portion of said conductive material surrounded by said sidewall spacer;

(h) removing said sidewall spacer structure;

(i) etching an isolation trench at the location previously occupied by said sidewall spacer structure, wherein said isolation trench extends through said second layer of conductive material, said silicon nitride layer, said first layer of conductive material, and into said portion of said epitaxial layer containing said base-type dopant, but does not extend substantially into the portion of said epitaxial layer which serves as said collector;

(j) introducing additional base-type dopant into the epilayer portion at the bottom of said isolation trench in a manner which leaves a portion of said epitaxial layer which serves as said collector essentially intact;

(k) depositing a dielectric material so as to fill said isolation trench;

(l) removing all material overlaying said first layer of conductive material surrounded by said isolation trench; and

(m) introducing an emitter dopant into said first layer of conductive material and into the upper portion of said epitaxial layer which underlays said first layer of conduc-

tive material so that a layer of emitter dopant overlays a layer of base-type dopant, forming said bipolar transistor emitter.

5,008,211

METHOD FOR FORMING FET WITH A SUPER LATTICE CHANNEL

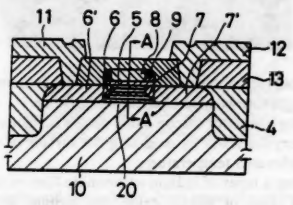
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 260,721, Oct. 21, 1988, abandoned, which is a division of Ser. No. 102,841, Sep. 30, 1987, abandoned. This application Sep. 14, 1989, Ser. No. 406,859

Claims priority, application Japan, Oct. 8, 1986, 61-240544; Oct. 8, 1986, 61-240545; Oct. 8, 1986, 61-240546

Int. Cl.[5] H01L *21/268, 21/335*

U.S. Cl. 437—40 **3 Claims**



1. A method of manufacturing an insulated gate field effect transistor comprising:

forming silicon semsiconductor films and silicon compound films selected from the group consisting of Si_3N_{4-x} $(0<x<4)$, $SiO_{2-x}(0<x<2)$, and $Si_xC_{1-x}(0<x<1)$, said silicon semiconductor and silicon compound films being alternatively formed into a superlattice on a substrate be virtue of a photo CVD method where the superlattice is formed as the channel region;

forming a gate insulating film on said superlattice;

forming a gate electrode on said gate insulating film;

forming a source region and drain region adjacent to said superlattice; and

exposing said superlattice to light in order to selectively crystallize said semiconductor films to increase carrier mobility.

5,008,212

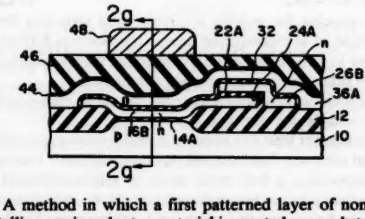
SELECTIVE ASPERITY DEFINITION TECHNIQUE SUITABLE FOR USE IN FABRICATING FLOATING-GATE TRANSISTOR

Teh-yi J. Chen, 22409 St. Andrews Ave., Cupertino, Calif. 95014

Filed Dec. 12, 1988, Ser. No. 283,340

Int. Cl.[5] H01L *21/265, 21/70*

U.S. Cl. 437—43 **20 Claims**



1. A method in which a first patterned layer of nonmonocrystalline semiconductor material is created on a substructure along its upper surface, characterized by the steps of:

performing a thermal oxidation to grow a main electrically insulating layer of oxide along the first patterned layer in such a way that the upper lateral edge of the remainder of the first patterned layer forms an asperity that protrudes outward, the thickness of the insulating layer along the asperity being less than the average thickness of the insulating layer;

forming a blanket layer over the insulating layer and over adjoining material of the substructure; and

selectively etching the blanket, insulating, and patterned layers with a primary etchant that attacks the material of the blanket and patterned layers more than the material of the insulating layer in order to remove (1) substantially the entire thickness of a specified section of the blanket layer located above the first patterned layer, (2) at least part of the underlying exposed section of the insulating layer including the portion located along the upper surface of the underlying part of the asperity, and (3) largely all of the underlying part of the asperity, whereby the remainder of the blanket layer forms a second patterned layer located above the remainder of the asperity.

5,008,213

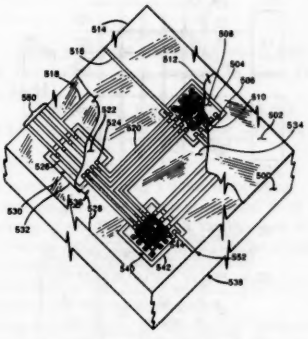
HYBRID WAFER SCALE MICROCIRCUIT INTEGRATION

Edward S. Kolesar, Jr., Beavercreek, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

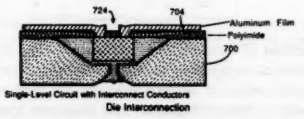
Division of Ser. No. 282,423, Dec. 9, 1988, abandoned. This application Apr. 13, 1990, Ser. No. 511,475

Int. Cl.[5] H01L *21/56, 21/60, 21/82*

U.S. Cl. 437—51 **20 Claims**



Wafer Scale Intergration Assembly



Single-Level Circuit with Interconnect Conductors
Die Interconnection

1. The method of fabricating a wafer scale integration multiple die integrated circuit comprising the steps of:

etching die receptacle wells into the planar top surface of a polished oxide coated semiconductor wafer, said receptacle wells each having a bottom area, sloping sidewall surfaces and rim portions;

depositing uncured liquid adhesive material in the bottom area of each said receptacle well;

inserting integrated circuit die having top, sidewall, and backside surfaces into said receptacle wells and said uncured adhesive resident therein to form a wafer and die assembly:

rotating said wafer and inserted die assembly into an inverted, top surface down, position wherein said liquid adhesive material is resident around said sidewall and backside surfaces of each said die;

aligning the inverted top surfaces of said die and wafer into a planar condition wherein the inverted die top surface and wafer top surface rest against a flat planar tooling member; and

applying adhesive flow promoting and cure promoting elevated temperature to the inverted wafer and die assembly to encourage adhesive flow downward into the space between die sidewall and receptacle well sidewall surfaces, and the curing of said adhesive into a solidified mass conforming with the die and receptacle well surfaces and with the surface of said flat planar tooling member.

5,008,214

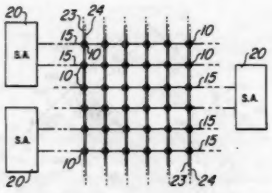
METHOD OF MAKING CROSSPOINT DYNAMIC RAM CELL ARRAY WITH OVERLAPPING WORDLINES AND FOLDED BITLINES

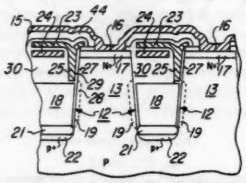
Donald J. Redwine, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 274,164, Nov. 21, 1988, abandoned, which is a division of Ser. No. 201,812, Jun. 3, 1988, abandoned. This application Jul. 21, 1989, Ser. No. 384,858

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 26 Claims





7. A method of forming first and second adjacent memory cells in a device comprising an array of memory cells created along a semiconductor surface wherein the first and second cells includes a storage capacitor and an access transistor, the method comprising the steps of:

forming a plurality of bit lines and a plurality of pairs of overlapping word lines with each overlapping pair crossing the bit lines;

creating a plurality of memory cells each positioned near a crossing of a bit line and a word line pair, for electrical association with a bit line and a word line, forming rows and columns of cells, each row of cells being positioned for electrical association with a word line pair and each memory cell comprising a transistor having a channel region and a gate for controlling conduction through the channel region; and

alternately connecting each word line of a first one of said pairs to gates of alternate transistors in a first one of said rows to effect electrical association of said first word line pair with said first row of cells.

5,008,215

PROCESS FOR PREPARING HIGH SENSITIVITY SEMICONDUCTIVE MAGNETORESISTANCE ELEMENT

Duen J. Chen; Guey F. Chi, and Ying C. Yeh, all of Chutung, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jul. 7, 1989, Ser. No. 377,248

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—83 6 Claims

1. A process for preparing high sensitivity indium antimonide film magnetoresistance element comprising:

(1) forming a layer of silicon oxide on the surface of a silicon single crystal wafer by oxidizing the surface of said wafer under elevated temperature;

(2) growing a layer of indium antimonide film on the surface of said layer of silicon oxide, the indium to antimony weight ratio in said layer of indium antimonide film being from 0.8 to 2.0, and

(3) annealing said layer of indium antimonide film by a two-stage annealing treatment comprising a first stage carried out in a first protective atmosphere containing from 1 to 5 weight percent of oxygen and a second stage carried out in a second protective atmosphere containing essentially no oxygen, whereby a protective oxide layer is formed on the surface of said layer of indium antimonide film and evenly distributed fine needle-like indium precipitates are formed within said layer of indium antimonide film.

5,008,216

PROCESS FOR IMPROVED CONTACT STUD STRUCTURE FOR SEMICONDUCTOR DEVICES

Hung-Chang W. Huang, San Jose, Calif., and Paul A. Totta, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 252,836, Oct. 3, 1988, abandoned. This application Dec. 11, 1989, Ser. No. 448,484

Int. Cl.[5] H01L *21/90, 21/44*

U.S. Cl. 437—192 17 Claims

1. A process for making a contact stud structure for the connection of semiconductor device components formed in a substrate to the wiring for interconnecting said device components to other device components comprising:

(a) depositing an insulator material having an etch-stop layer on said device substrate,

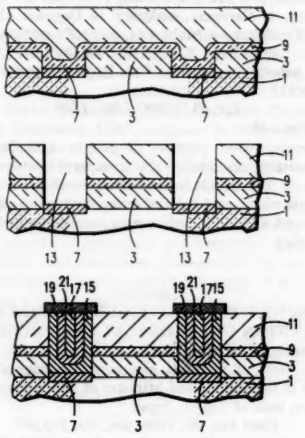
(b) forming at least one opening in said insulator material and said etch-stop layer at said device component locations,

(c) depositing a first metal layer in said opening of said insulating layer and said etch-stop layer, said first metal layer being reactive with said substrate and adhesive thereto and lining said opening in said insulator and said etch-stop layer,

(d) depositing a second metal layer conformally onto said first metal layer,

(e) depositing a third metal layer conformally onto said

second metal layer and filling said opening in said insulator layer and thereby forming said contact stud, and



(f) wherein said second and third metal layers being selected from the group comprising refractory metals.

5,008,217

PROCESS FOR FABRICATING INTEGRATED CIRCUITS HAVING SHALLOW JUNCTIONS

Christopher J. Case, New Providence; Kin P. Cheung, Hoboken; Ruichen Liu; Ronald J. Schutz, both of Warren, and Richard S. Wagner, Bernardsville, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 8, 1990, Ser. No. 534,772

Int. Cl.[5] H01L *21/441*

U.S. Cl. 437—195 6 Claims

1. A process for fabricating a device comprising the steps of forming active regions of said device, forming a dielectric over said active regions, forming windows through said dielectric, electrically contacting said active region through said windows, and forming a metal pattern on said dielectric characterized in that a nucleation layer is formed between said dielectric and said metal pattern and said electrical contact and said metal for said metal pattern is deposited by chemical vapor deposition with a triisobutyl aluminum precursor wherein said nucleation layer comprises a material whose composition produces coverage by aluminum grains larger than 0.15 μm of at least 97.5% of said nucleating material surface before said aluminum has an average thickness of 120 Å.

5,008,218

METHOD FOR FABRICATING A THIN FILM TRANSISTOR USING A SILICIDE AS AN ETCH MASK

Genshiro Kawachi, Hitachi; Akio Mimura, Katsuta; Nobutake Konishi, Hitachiota; Kikuo Ono, and Takashi Suzuki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 18, 1989, Ser. No. 408,729

Claims priority, application Japan, Sep. 20, 1988, 63-233425

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—201 14 Claims

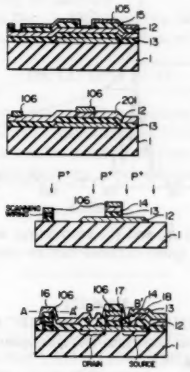
1. A method of fabricating an active matrix substrate comprising the steps of:

(a) forming an island region of a first semiconductor film on a prescribed insulating substrate;

(b) forming a first insulating film and a second semiconductor film on said first insulating film;

(c) forming a second insulating film on said second semiconductor film and thereafter forming a prescribed pattern of the second insulating film;

(d) depositing prescribed metal on the pattern and thereafter forming a compound of the second semiconductor film and the metal;



(e) removing unreacted portion of the metal and the second insulating film, and

(f) etching said second semiconductor film and said first insulating film using said compound as a mask.

5,008,219

PROCESS FOR PRODUCING GLASS

Koichi A. Hara, Ome, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Dec. 11, 1989, Ser. No. 448,283

Claims priority, application Japan, Dec. 26, 1988, 63-326365

Int. Cl.[5] C03C *3/04*

U.S. Cl. 501—12 4 Claims

1. A process for producing a glass, comprising:

(a) hydrolyzing a metal alkoxide selected from the group consisting of silicon, aluminum, titanium and zirconium in the presence of an organic solvent and an aqueous ammonia solution to obtain a sol solution,

(b) concentrating the sol solution to 1.00-1.95 times the volume of the metal alkoxide used,

(c) adding a hydrofluoric or hydrosilicofluoric acid catalyst to the resulting concentrate to allow the concentrate to gel,

(d) drying the resulting gel, and

(e) heating the dried gel to obtain the desired glass.

5,008,220

BIOLOGICAL SUPPORT

Alan J. Brown, Milledgeville, Ga.; Roger James, Cornwall, and Nigel P. Glasson, Dorset, both of United Kingdom, assignors to ECC International Limited, United Kingdom

Filed Feb. 15, 1989, Ser. No. 311,221

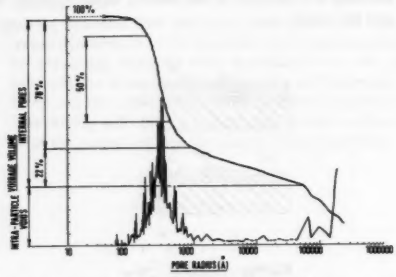
Claims priority, application United Kingdom, Feb. 15, 1988, 8803413

Int. Cl.[5] C04B *38/06*

U.S. Cl. 501—81 20 Claims

1. A process for preparing a porous inorganic material suitable for use as a support for immobilising biological macromolecules, which process comprises: (a) calcining a kaolinitic clay in which there is distributed from 5% to 25%, by weight of the clay, of a carbonaceous material having a particle size no greater than about 1000 Å, at a temperature and for a time such that a substantial portion of the kaolinitic clay is converted to porous, defect aluminium-silicon spinel without appreciable

formation of mullite, the spinel having an interconnecting array of pores predominantly in the size range of from about



100 to about 1000 Å; and (b) recovering said porous defect aluminium-silicon spinel without further calcination.

5,008,221

HIGH TOUGHNESS CERAMIC ALLOYS

Thomas D. Ketcham, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Continuation of Ser. No. 926,655, Nov. 4, 1986, abandoned, which is a continuation of Ser. No. 812,469, Dec. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 722,229, Apr. 11, 1985, abandoned. This application Jun. 12, 1990, Ser. No. 537,499

Int. Cl.[5] C04B *35/48*

U.S. Cl. 501—103 **11 Claims**

1. A ceramic alloy consisting essentially of at least one member selected from the group consisting of partially stabilized ZrO_2, partially stabilized ZrO_2-HfO_2 solid solution, and partially stabilized HfO_2 exhibiting high toughness through the inclusion of 0.5–5 mole %, as expressed on the oxide basis, of a toughening agent selected from the group of $YNbO_4$ and/or $YTaO_4$ and/or $MNbO_4$ and/or $MTaO_4$, wherein M represents Mg^{+2}, Ca^{+2}, Sc^{+2}, and/or a rare earth metal selected from the group consisting of La^{+3}, Ce^{+4}, Ce^{+3}, Pr^{+3}, Nd^{+3}, Sm^{+3}, Eu^{+3}, Gd^{+3}, Tb^{+3}, Dy^{+3}, Ho^{+3}, Er^{+3}, Tm^{+3}, Yb^{+3}, and Lu^{+3} which are substituted for Y^{+3}, one $+3$ cation being substituted for one Y^{+3} cation, three $+2$ cations being substituted for two Y^{+3} cations, three $+4$ cations for four Y^{+3} cations, in which said partial stabilization is produced through the inclusion of 1.1–4.5 mole % stabilizer where the amount of toughening agent is between 0.5–4.4 mole % and of 0.6–4.5 mole % stabilizer where the amount of toughening agent is between 4.4–5 mole %, the microstructure of said alloy consisting predominantly of crystals having a tetragonal structure.

5,008,222

ALUMINUM TITANATE CERAMIC SINTERED BODY

Tsuneji Kameda, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 31, 1989, Ser. No. 330,920

Claims priority, application Japan, Mar. 31, 1988, 63-76130

Int. Cl.[5] C04B *35/46*

U.S. Cl. 501—134 **9 Claims**

1. A ceramic sintered body having a thermal variation in length (L) of less than 0.33% and a Young's Modulus of not less than 1,600 kg/mm^2 produced by sintering 1 to 10 weight % of magnesium oxide, 0.5 to 10 weight % of silicon oxide, the remainder being substantially aluminum titanate having a mean particle diameter of from 0.6μm to 8μm, wherein the thermal variation in length is defined as $(l_{max}-l_{min})/l_0$, expressed as a percentage, where the original length of the sample is l_0, its maximum length when heated from 20° C. to 1,000° C. is l_{max}, and its minimum length is l_{min}.

5,008,223

GRAYISH-BLACK ENCAPSULATED PIGMENTS AND METHOD OF THEIR PRODUCTION

Dietrich Speer, Hanau; Akos Kiss, Wasserlos; Peter Kleinschmit, Hanau, and Juergen Hanich, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 2, 1990, Ser. No. 487,295

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1989, 3906818

Int. Cl.[5] C09C *1/62, 1/48*

U.S. Cl. 106—450 **8 Claims**

1. An encapsulated pigment ranging in color from gray to black consisting essentially of a transparent crystal of zirconium silicate into which colored compounds are encapsulated as a discrete phase, said colored compound being carbon black particles with a specific surface area (according to BET) of 10 to 1000 m^2/g.

5,008,224

ADSORBENT FOR PHOSPHORUS AND METHOD FOR PRODUCTION OF ADSORBENT FOR PHOSPHORUS

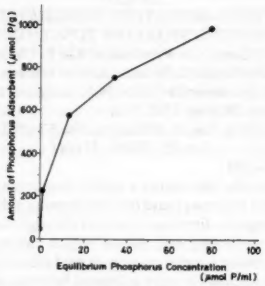
Eiji Watanabe, Inokoshi; Nasakazu Horio, Konan, and Kenzi Suzuki, Aichi, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jun. 30, 1989, Ser. No. 373,587

Claims priority, application Japan, Jul. 7, 1988, 63-169920

Int. Cl.[5] B01J *20/12, 20/16;* C02F *1/28*

U.S. Cl. 502—63 **4 Claims**



1. A phosphorus adsorbent consisting essentially of a fired product obtained by comminuting volcanic ash, adding 0.6 to 1.5 part by weight, based on part by weight of the comminuted volcanic ash, of clay and water to the comminuted volcanic ash to obtain a mixture, and firing the mixture at a temperature in the range of 100° to 900° C.;

said fired product consisting substantially of alumino-silicate;

said aluminosilicate consisting essentially of at least 20% by weight of Al_2O_3, at least 40% by weight of SiO_2 and at least 1% by weight of Fe_2O_3.

5,008,225

CATALYTIC DEHYDROHALOGENATION CATALYST

Angelo J. Magistro, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 72,324, Jul. 13, 1987, abandoned, Division of Ser. No. 613,551, May 24, 1984, abandoned. This application Jun. 27, 1989, Ser. No. 372,589

Int. Cl.[5] B01J *27/10, 29/06*

U.S. Cl. 502—73 **8 Claims**

1. A dehydrohalogenation catalyst comprising from about 0.1% to about 30% by weight based on the total weight of the catalyst of at least one rare earth metal chloride deposited on a solid synthetic zeolite having a pore opening of at least 5A.

5. The catalyst of claim 1 wherein the catalyst additionally contains about 5% by weight of an alkali and/or alkaline earth metal oxide or chloride.

5,008,226

PROCESS FOR MAKING ACID ACTIVATED BLEACHING EARTH USING HIGH SUSCEPTIBILITY SOURCE CLAY AND NOVEL BLEACHING EARTH PRODUCT

Dennis R. Taylor, Willoughby Hills, Ohio, and Charles B. Ungermann, Livermore, Calif., assignors to Engelhard Corporation, Iselin, N.J.

Filed May 16, 1989, Ser. No. 352,578
Int. Cl.[5] B01J *21/16, 20/12*
U.S. Cl. 502—81 25 Claims

16. A method for producing bleaching earth from naturally-occurring mixture of attapulgite and bentonite clays in which the attapulgite content is from 10% to 90% by weight, said clay mixture having a slurry pH in the range of at least 5 and below 7 and a pore volume in the range of 0.25–0.35 cc/gm, mixing said clay with a solution of sulfuric acid in amount corresponding to an acid dosage in the range of 1 to 10% by weight, heating said mixture to react said clay with said acid and, without washing the resulting reaction product, recovering it for use as a bleaching earth.

5,008,227

PROCESS FOR MAKING ACID ACTIVATED BLEACHING EARTH USING HIGH SUSCEPTIBILITY SOURCE CLAY AND NOVEL BLEACHING EARTH PRODUCT

Dennis R. Taylor, Willoughby Hills, Ohio, and Charles B. Ungermann, Livermore, Calif., assignors to Engelhard Corporation, Iselin, N.J.

Filed May 16, 1989, Ser. No. 352,790
Int. Cl.[5] B01J *20/12, 20/30*
U.S. Cl. 502—83 9 Claims

1. A method for producing bleaching earth which comprises selecting a naturally-occurring acidic attapulgite clay having a pH in the range of 5 to 7 and a pore volume in the range of 0.25–0.50 cc/gm, mixing said clay with an acid solution in amount corresponding to an acid dosage in the range of 10 to 30%, heating said mixture at a temperature in the range of 77° to 220° F. to react said clay with said acid and, without washing the resulting reaction product, recovering it for use as a bleaching earth.

8. The method of claim 1 wherein said acid is sulfuric.

9. The bleaching earth product obtained by the method of claim 1.

5,008,228

METHOD FOR PREPARING A SILICA GEL SUPPORTED METALLOCENE-ALUMOXANE CATALYST

Main Chang, Houston, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Mar. 29, 1988, Ser. No. 174,668
The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.
Int. Cl.[5] C08F *4/648*
U.S. Cl. 502—111 10 Claims

1. A process for preparing a supported metallocene alumoxane catalyst for polymerization of olefins, comprising the steps of:

(a) adding a water-impregnated catalyst support to a stirred solution of an aluminum trialkyl in an amount sufficient to provide a mole ratio of aluminum trialkyl to water of from about 10:1 to about 1:1 and allowing the mixture to react; and

(b) adding a metallocene of a Group 4b or 5b transition metal to the reacted mixture in an amount sufficient to provide on said catalyst support a mole ratio of aluminum to transition metal of from about 1000:1 to about 1:1.

5,008,229

COMPOSITIONS CONTAINING PHOSPHONITRILE CHLORIDES

Johann Schuster, Emmerting; Martin Piehler, Mehring; Horst Müller, Emmerting, and Otto Schneider, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 7, 1989, Ser. No. 447,325
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1989, 3903137
Int. Cl.[5] B01J *31/18*
U.S. Cl. 502—167 8 Claims

1. A composition which will accelerate the condensation and/or equilibration of organosiloxanes which comprises phosphonitrile chloride and/or reaction products of phosphonitrile chloride and organosiloxanes, a halogen-free organic solvent and a solubilizer.

5,008,230

CATALYST FOR PREPARING HIGH CLARITY, COLORLESS POLYETHYLENE TEREPHTHALATE

Carl S. Nichols, Charlotte, N.C., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed May 22, 1989, Ser. No. 355,534
Int. Cl.[5] B01J *23/78, 23/80, 23/84*
U.S. Cl. 502—170 11 Claims

1. A terephthalic acid catalyst composition for making polyethylene terephthalate from terephthalic acid comprising:

(a) a first metal catalyst of at least one of cobalt and zinc, said first metal catalyst being present in a range of from about 5 to about 60 ppm;

(b) a second metal catalyst of at least one of zinc, manganese, magnesium and calcium, said second metal catalyst being present in a range of from about 10 to about 150 ppm; and

(c) antimony, being present in a range of from about 150 to 650 ppm; wherein said first metal catalyst, said second metal catalyst, and said antimony amounts are based on the theoretical yield of polyethylene terephthalate and result in a measurable increase in the rate of said terephthalic acid polymerization without causing degradation of said polyethylene terephthalate.

5,008,231

HEAT SENSITIVE RECORDING MATERIAL

Katsuaki Yoshizawa, Amagasaki, and Yoshitaka Oeda, Ikoma, both of Japan, assignors to Kanzaki Paper Manufacturing Company Limited, Tokyo, Japan

Filed May 25, 1989, Ser. No. 356,950
Claims priority, application Japan, May 31, 1988, 63-134808
Int. Cl.[5] B41M *5/18*
U.S. Cl. 503—207 14 Claims

1. A heat-sensitive recording material comprising a support; a heat-sensitive recording layer formed over the support and containing a color forming material, a color developing material which forms a color on contact with the color forming material and a pigment which is about 80 to about 400 ml/100 g in oil absorption according to JIS K 5101 and about 3 to about 15 μm in average particle size; and an overcoat layer formed over the heat-sensitive recording layer and comprising a binder and a pigment, wherein the pigment is used in an amount of about 0.5 to about 3.0 parts by weight per part by weight of the binder and the coating amount of the overcoat layer is about 0.3 to about 2.0 g/m^2 on dry basis.

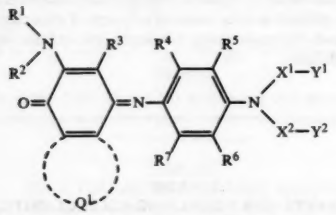
5,008,232

THERMAL TRANSFER DYE DONATING MATERIAL

Mitsugu Tanaka, and Seiiti Kubodera, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Tokyo, Japan

Filed Jan. 8, 1990, Ser. No. 461,893
Claims priority, application Japan, Jan. 9, 1989, 1-2468
Int. Cl.[5] B41M 5/035, 5/26
U.S. Cl. 503—227 10 Claims

1. A thermal transfer dye donating material comprising a color material layer formed on a support, said color material layer containing a binder resin or a wax, and a dye represented by the general formula (I) below:



(I)

wherein Q^1 is an atomic group having at least one nitrogen atom and forming a five- to seven-membered nitrogen-containing heterocycle together with the carbon atoms to be bonded; R^1 is an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an aminocarbonyl group, or a sulfonyl group; R^2 is a hydrogen atom or an alkyl group; R^3 to R^7 are independently a hydrogen atom, an alkyl group, an alkoxy group, or a halogen atom; X^1 and X^2 are independently an alkylene group; Y^1 is an alkoxy group, a halogen atom, an acylamino group, an alkoxycarbonyl group, an alkoxycarbonyloxy group, a cyano group, an alkoxycarbonylamino group, an aminocarbonylamino group, a carbamoyl group, an acyloxy group, an acyl group or a hydroxy group; Y^2 is a hydrogen atom or groups defined above as Y^1.

5,008,233

NOVEL CRYSTALLINE SILICON ENHANCED ALUMINAS

Susan L. Lambert, Rolling Meadows, Ill., assignor to UOP, Des Plaines, Ill.

Filed Sep. 7, 1989, Ser. No. 404,550
Int. Cl.[5] B01J 21/12, 27/12
U.S. Cl. 502—231 15 Claims

1. A non-homogeneous crystalline silicon enhanced alumina (SEAL) having a bulk empirical formula of $Al_{2-x}Si_xO_3F_x$ where x varies from about 0.01 to about 0.5, the SEAL characterized in that it has a three-dimensional pore structure with the pores having diameters in the range of about 20 to about 300 Å, has a crystal structure characteristic of alumina and where the surface of the SEAL has a higher concentration of silicon than the interior of the SEAL.

7. A process for preparing a non-homogeous crystalline silicon enhanced alumina (SEAL) having a bulk empirical formula of $Al_{2-x}Si_xO_3F_x$ where x varies from about 0.01 to about 0.5 comprising contacting a crystalline alumina with a solution of a fluorosilicate salt at a temperature and for a time effective to produce a SEAL having a three-dimensional pore structure with the pores having diameters in the range of about 20 to about 300 Å, having a crystal structure characteristic of the crystalline alumina, and where the surface of the SEAL has a higher concentration of silicon than the interior of the SEAL.

5,008,234

PROCESS FOR THE PREPARATION OF CATALYTIC METAL CLUSTERS

Geoffrey A. Ozin, Toronto; Helmut X. Huber, Etobicoke; Richard A. Prokopowicz, and John Godber, both of Toronto, all of Canada, assignors to Her Majesty the Queen in the Right of Canada, as Represented by the Minister of Energy Mines and Resources Canada, Ottawa, Canada

Filed Jan. 13, 1989, Ser. No. 296,689
Claims priority, application Canada, Jun. 17, 1988, 569838
Int. Cl.[5] B01J 23/42, 23/89
U.S. Cl. 502—326 8 Claims

1. A process of preparing catalyst compositions comprising at least one metal in monatomic or small cluster form, surface deposited on or in a support, which comprises:

vaporizing metal at low temperature and pressure in the presence of ethylene gas and gaseous solvent, to form a solvent stabilized metal-ethylene complex;

solidifying said stabilized complex;

warming the solid complex to liquid phase, removing excess ethylene, and impregnating a solid support with the solvent stabilized metal ethylene complex in the liquid phase, to deposit the complex on the support surface; and

removing solvent, decomposing the complex and forming monatomic or small cluster metal deposits on the support.

5,008,235

CATALYSTS OF CU-AL-THIRD METAL FOR HYDROGENATION

Richard W. Wegman, and David R. Bryant, both of South Charleston, W. Va., assignors to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 21, 1989, Ser. No. 454,456
Int. Cl.[5] B01J 21/04, 21/06, 23/02, 23/72
U.S. Cl. 502—342 1 Claim

1. A reduced catalyst composition comprising copper, aluminum, and a metal, X, selected from the group consisting of magnesium, zinc, titanium, and mixtures thereof; made by a process comprising:

reducing a mixture of the oxides of copper, aluminum, and X by heating in the presence of a reducing gas under activating conditions which comprise gradually increasing the temperature from an ititial temperature of about 50° C. to a final temperature of about 180° C. at a rate of about 3° C. to about 6° C. per hour.

5,008,236

HEAT-SENSITIVE RECORDING MATERIAL

Yoshiyuki Takahashi, Kawasaki; Kunitaka Toyofuku, Sakura, and Akiko Iwasaki, Urawa, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

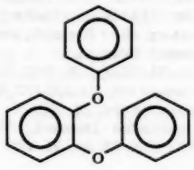
Filed Dec. 28, 1989, Ser. No. 458,191
Claims priority, application Japan, Apr. 5, 1989, 1-84788
Int. Cl.[5] B41M 5/18
U.S. Cl. 503—209 6 Claims

1. A heat-resistive recording material comprising:

a substrate sheet, and

a heat sensitive color-forming layer formed on at least one surface of the substrate sheet and comprising a substantially colorless dye precursor, a color-developing agent reactive with the dye precursor upon heating to develop a color, and a binder,

said heat-sensitive color-forming layer further comprising a sensitizing agent consisting essentially of 1,2-diphenoxybenzene of the formula (I):



(I)

5,008,237

VINYL DEVELOPER RESINS

Rong-Chang Liang, Centerville; Karl A. Kintz, Kettering; Joseph G. O'Connor, and Paul C. Adair, both of Springboro, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

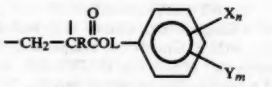
Continuation of Ser. No. 86,059, Aug. 14, 1987. This application Mar. 14, 1989, Ser. No. 323,571

The portion of the term of this patent subsequent to Oct. 31, 2006, has been disclaimed.

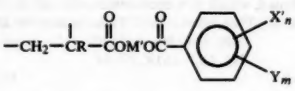
Int. Cl.[5] B41M 5/22; G03C 1/68

U.S. Cl. 503—212 23 Claims

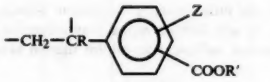
1. A developer sheet comprising a support having a layer of a color developer on the surface thereof, said color developer being a microparticle capable of reacting with a substantially colorless electron donating color former to produce a color image and being a polymer having a repeating unit of formulae (I), (II) or (III)



(I)



(II)

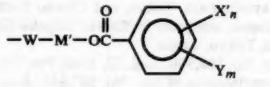


(III)

where R is a hydrogen atom or a methyl group;

L is a direct bond or a spacer group;

X is —OH, —COOH, —OM, COOR' or a group of the formula (IV):



(IV)

Y is an alkyl group, an aryl group, or an aralkyl group;

X' is —OH, —COOH, —OM, or —COOR';

W is —O— or

Z is —OH or a hydrogen atom;

M is a metal atom;

M' is a divalent metal atom;

R' is a hydrogen atom, an alkyl group, or a metal atom as defined for M;

n is 1 or 2 and when n is 2, x or X' may be the same or different;

m is 0, 1, or 2 and when m is 2; Y may be the same or different.

5,008,238

LEUCO DYES AND RECORDING MATERIAL EMPLOYING THE SAME

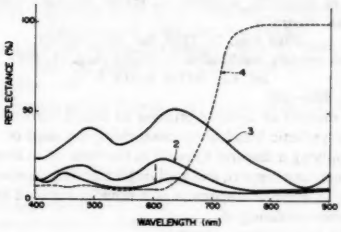
Hiroshi Gotoh, Fuji; Shigeru Kusakata, Susono, and Isao Shiojima, Mishima, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 19, 1989, Ser. No. 367,684

Claims priority, application Japan, Jun. 20, 1988, 63-151964; Sep. 6, 1988, 63-223780; Sep. 16, 1988, 63-231785; Sep. 21, 1988, 63-234836

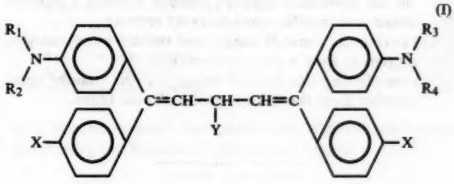
Int. Cl.[5] B41M 5/16, 5/18, 5/22

U.S. Cl. 503—217 14 Claims



1. A recording material comprising:

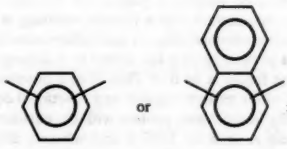
a substrate and a recording layer formed thereon, said recording layer comprising a leuco dye of the formula (I):



(I)

wherein R_1, R_2, R_3 and R_4 each represent an alkyl group having 1 to 10 carbon atoms; X represents hydrogen, an alkyl group having 1 to 10 carbon atoms, an alkoxyl group having 1 to 10 carbon atoms or a halogen; and Y represents R_5—Z—SO_2NH—, R_6—ZCONH—, or

in which Z represents



R_5 and R_6 each represent hydrogen, an alkyl group having 1 to 10 carbon atoms, or a halogen; R_7 and R_8 each represent hydrogen, a cyano group, or —COR_9, in which R_9

represents a lower alkyl group, a lower alkoxyl group, or a phenyl group which may be substituted by an alkyl group having 1 to 4 carbon atoms, and alkoxyl group having 1 to 4 carbon atoms, or a halogen; or R_9 is a naphthyl group which may be substituted by an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms or a halogen; with the proviso that R_7 and R_8 are not both hydrogen.

5,008,239

TRANSFER PRINTING OF NATURAL AND NATURAL/SYNTHETIC FIBRES

Henry Donenfeld, Brighton, and Eduard Lemanis, East Keilor, both of Australia, assignors to BASF Australia Ltd., Melbourne, Australia

Filed Aug. 22, 1988, Ser. No. 235,041

Claims priority, application Australia, Aug. 21, 1987, P13886

Int. Cl.[5] B41M *5/035, 5/26*

U.S. Cl. 503—227 **25 Claims**

1. A method of transfer printing an image onto natural or natural/synthetic blend fibres comprising the steps of:

(a) applying a disperse dyestuff in the form of an image to a temporary support, and applying a transfer agent comprising an aqueous dispersion of a powder selected from the group consisting of:

(1) a polyurethane powder;

(2) a copolyester powder;

(3) a polyamide powder;

(4) a copolyamide powder; and

(5) mixtures thereof

to the temporary support, thereby forming a dyestuff image- and transfer agent-carrying support;

(b) drying the dyestuff image- and transfer agent-carrying support to form a dried support; and

(c) transferring the dyestuff image and the transfer agent together from the dried support onto the fibres.

5,008,240

METHOD OF TREATING INFLAMMATION

Hanne Bentz, Palo Alto; Larry Ellingsworth, San Jose, and Rosa Armstrong, Palo Alto, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Continuation of Ser. No. 836,672, Mar. 6, 1986, Pat. No. 4,806,523, which is a continuation-in-part of Ser. No. 763,337, Aug. 6, 1985, abandoned. This application Aug. 9, 1988, Ser. No. 230,330

The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.

Int. Cl.[5] A61K *37/02*

U.S. Cl. 514—2 **21 Claims**

1. A method of treating a patient for the alleviation of a symptom or manifestation of a disease resulting in inflammation comprising administering an anti-inflammatorily effective amount of a protein having the amino acid sequence of cartilage inducing factor A or B or TGF-β or a functional equivalent thereof to the patient wherein any functional equivalent is a substantially homologous protein with the cartilage inducing factor protein A or B or TGF-β and wherein differences in sequences between the cartilage inducing factor protein A or B or TGF-β and any substantially homologous protein does not affect the anti-inflammatory activity of the cartilage inducing factor adversely.

5,008,241

NOVEL INSULIN PEPTIDES

Jan Markussen, Herlev; Kjeld Norris, Hellerup, and Liselotte Langkjaer, Klampenborg, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 75,550, Jul. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 838,472, Mar. 11, 1986, abandoned. This application Oct. 20, 1989, Ser. No. 424,503

Claims priority, application Denmark, Mar. 12, 1985, 1135/85; Mar. 10, 1986, 1070/86; Jul. 21, 1986, 3470/86; Feb. 25, 1987, 0948/87

The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.

Int. Cl.[5] A61K *37/26;* **C07K** *7/40, 7/42*

U.S. Cl. 514—3 **10 Claims**

10. An aqueous solution of a human insulin analog having an amino acid residue at A21, selected from the group consisting of Glu, Asp, Lys, Arg, His, Val, Gln, Ile, Phe, Tyr, Met, Gly, Ser, Thr, Ala, Leu, Trp and hSer, wherein at least one of the amino acid residues at A4, A17, B13, and B21 is a neutral amino acid reside selected from the group consisting of Gly, Val, Ile, Leu, Phe, Tyr, Met, Asn, Gln, Ala, Ser and Thr, wherein the B27 amino acid residue is Lys or Arg and wherein the C-terminal carboxyl group of the B-chain is amidated at a pH value of 2.5–5.8 and containing therein zinc ions in a concentration from 5 μg to 200 μg zinc per ml with the proviso that the insulin analog has at least one charge more than human insulin at a pH value of 7.

5,008,242

TREATMENT OF INFLAMMATION USING 1-ANTICHYMOTRYPSIN

John Lezdey, 976 Kingston Dr., Cherry Hill, N.J. 08034, and Allan Wachter, 9822 S. Grandview, Tempe, Ariz. 85284

Continuation-in-part of Ser. No. 181,707, Apr. 14, 1989, abandoned, and a continuation-in-part of Ser. No. 242,735, Sep. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 946,445, Dec. 24, 1986, abandoned. This application Dec. 4, 1989, Ser. No. 445,005

Int. Cl.[5] A61K *37/64*

U.S. Cl. 514—8 **13 Claims**

1. A method for topically treating inflammation in a human afflicted with an inflammatory condition which comprises administering to said human alpha 1-antichymotrypsin topically in an amount sufficient to inhibit human skin mast cell chymase.

5,008,243

PHARMACEUTICAL COMPOSITION CONTAINING A GLYCOPROTEIN

Masanori Ikuzawa; Yoshiharu Oguchi; Kenichi Matsunaga, all of Tokyo; Noriyuki Toyoda, Sagamihara; Takao Furusho, Tokyo; Takayoshi Fujii, Tokyo, and Chikao Yoshikumi, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 898,900, Aug. 22, 1986, Pat. No. 4,820,689, which is a continuation of Ser. No. 637,831, Aug. 6, 1984, abandoned. This application Dec. 16, 1988, Ser. No. 285,664

Claims priority, application Japan, Aug. 11, 1983, 58-147231; Aug. 11, 1983, 58-147232; Aug. 11, 1983, 58-147233; Aug. 11, 1983, 58-147234; Aug. 11, 1983, 58-147235; Aug. 11, 1983, 58-147236; Aug. 11, 1983, 58-147237; Aug. 11, 1983, 58-147238; Aug. 11, 1983, 58-147239; Aug. 11, 1983, 58-147240; Aug. 11, 1983, 58-147241

Int. Cl.[5] A61K *37/02*

U.S. Cl. 514—8 **13 Claims**

1. A method for increasing or decreasing the production or metabolism of prostaglandins in a human, which comprises: administering to a human in need thereof a prostaglandin increasing or decreasing effective amount of glycoprotein having a molecular weight of 5000 to 300,000, as determined

by ultra-centrifugation and 18 to 38% by weight of proteins, produced by:

(a) culturing a basidiomycetous fungal species belonging to the genus Coriolus;

(b) extracting the thus proliferated mycelia or fruit bodies with hot water or an aqueous alkaline solution; and

(c) removing low molecular weight substances having a molecular weight of less than 5000 from the extract.

5,008,244

METHOD FOR INCREASING FERTILITY IN ANIMALS

Lindy F. Miller, West Terre Haute, and Peter J. Thomford, Terre Haute, both of Ind., assignors to Pitman-Moore, Inc., Lake Forest, Ill.

Filed May 15, 1989, Ser. No. 352,010

Int. Cl.[5] A61K *37/02*

U.S. Cl. 514—12 **20 Claims**

1. A method for increasing fertility in a food producing animal selected from the bovine, porcine or ovine species, comprising:

administering a fertility increasing amount of somatotropin to said animal in the finishing stage of growth thereby increasing embryonic survival and litter size during the reproductive stage of growth.

5,008,245

NOVEL PEPTIDYL CARBAMATE INHIBITORS OF THE ENZYME ELASTASE

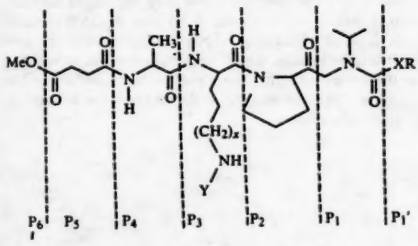
George A. Digenis, Lexington, Ky., and Bushra J. Agha, Nanuet, N.Y., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Filed Oct. 27, 1988, Ser. No. 263,385

Int. Cl.[5] A61K *37/64;* C07K *5/08*

U.S. Cl. 514—18 **19 Claims**

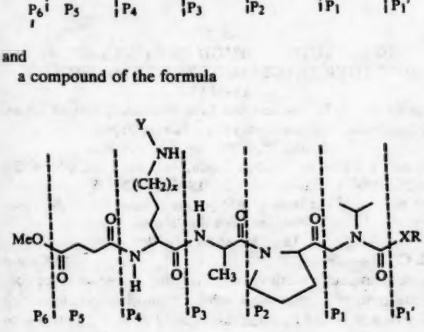
1. A compound selected from the group consisting of a compound of the formula



(I)

and

a compound of the formula

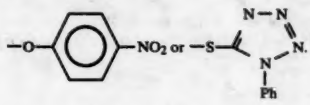


(II)

wherein

x is 1 or 2;

Y is carbobenzoxy or benzoyl; and XR is



5,008,246

PEPTIDES SUPPRESSING THE FUNCTION OF THE IMMUNE SYSTEM, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESS FOR PREPARING SAME

Istvan Schön; Olga Nyeki; Lajos Kisfaludy, deceased, late of Budapest by Maria Kisfaludy, Marta Kisfaludy, Andras Kisfaludy, legal heirs ; Laszlo Denes; György Hajos, and Laszlo Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R. T., Budapest, Hungary

Filed Jun. 13, 1989, Ser. No. 365,457

Claims priority, application Hungary, Jun. 14, 1988, 3037/88

Int. Cl.[5] A61K *37/02;* C07K *5/08, 5/10*

U.S. Cl. 514—18 **9 Claims**

1. A peptide of the formulae (1) to (16) D-Arg-Lys-D-Asp,

D—Arg—Lys—D—Asp,	(1)
Arg—D—Lys—Asp,	(2)
D—Arg—D—Lys—D—Asp,	(3)
Arg—D—Lys—D—Asp,	(4)
D—Arg—Lys—Asp,	(5)
D—Arg—D—Lys—Asp,	(6)
Arg—Lys—D—Asp,	(7)
Arg—Lys—D—Asp—Val,	(8)
Arg—Lys—Asp—D—Val,	(9)
D—Arg—Lys—Asp—Val,	(10)
Arg—D—Lys—Asp—Val,	(11)
Lys(Arg)—Asp,	(12)
Lys(Arg)—D—Asp	(13)
Arg—Lys(Arg)—Asp,	(14)
Arg—Lys—Asp(Val),	(15)
Arg—Lys—D—Asp(Val)	(16)

or a pharmaceutically acceptable acid addition salt thereof suppressing the function of the immune system.

5,008,247

POLYSULFURIC ACID ESTERS OF BIS-ALDONAMIDES AND THEIR DERIVATIVES, PROCESS FOR THEIR PREPARATION AND MEDICAMENTS

Eike Meinetsberger, Munich, Fed. Rep. of Germany, assignor to Luitpold-Werk Chemisch-pharmazeutische Fabrik GmbH & Co., Munich, Fed. Rep. of Germany

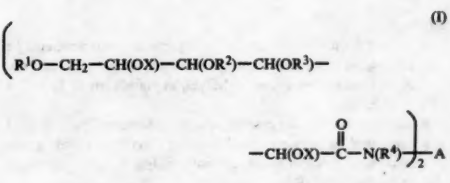
Filed Oct. 12, 1988, Ser. No. 256,624

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1987, 3734815

Int. Cl.[5] C07H *15/04, 15/18, 11/00;* A61K *31/72*

U.S. Cl. 514—23 **17 Claims**

1. Polysulfuric acid exters of bisaldonamides an their derivatives of the formula (I):

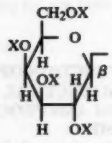


(I)

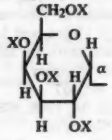
in which either

all radicals R^1, R^2 and R^3 independently of one another represent X, or

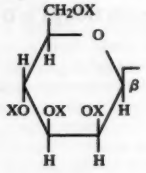
two of the radicals R^1, R^2 and R^3 stand for X, and the third stands for a radical of the formulae (II) to (VII),



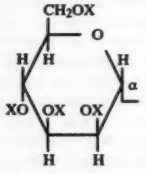
(II)



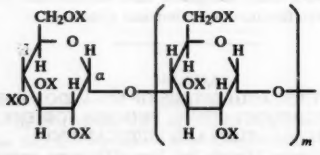
(III)



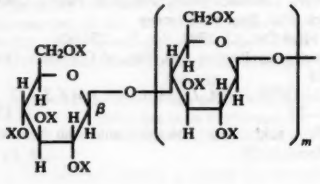
(IV)



(V)



(VI)



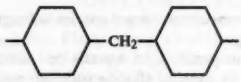
(VII)

wherein

X in the formulae (I) to (VII) represents independently a hydrogen atom or the group $-SO_3H$, wherein at least one X represents the group $-SO_3H$, m stands for 0, 1, 2, 3, 4, 5 or 6,

A in formula (I) represents a straight-chain or branched, saturated alkylene radical having 2 to 22 carbon atoms which is unsubstituted or substituted by one or more radicals $-CO_2R^5$,

or A stands for a single bond or the radical



R^4 and R^5 independently represent a hydrogen atom or a C_1–C_6-alkyl radical, and their salts of inorganic or organic bases.

17. Medicaments, containing one or more compounds of the formula (I), as claimed in claims 1 or 2, and pharmaceutically acceptable excipients and auxiliaries.

5,008,248

VETERINARY COMPOSITIONS FOR THE TREATMENT OF SCOURS AND DEHYDRATION

Robert J. Bywater, and Robert J. Dupe, both of Surrey, England, assignors to Beecham Group p.l.c., Epsom, England

Continuation of Ser. No. 930,498, Nov. 14, 1986, abandoned. This application Jan. 30, 1990, Ser. No. 474,635

Claims priority, application United Kingdom, Nov. 18, 1985, 8528307; Mar. 7, 1986, 8605689

Int. Cl.[5] A61K *31/195, 31/70*

U.S. Cl. 514—23 **14 Claims**

1. A veterinary composition, comprising by weight:

75–85% of an actively absorbed monosaccharide,

3.5–5% of an actively absorbed naturally occurring amino acid,

1–3% of a buffering agent,

5–10% of an electrolyte, and

5–10% of one or more citrate salts, said composition not containing any citric acid that is not in the form of a salt.

11. A method of treating diarrhoea in domestic animals, which method comprises administering to the animal suffering from diarrhoea a therapeutically effective amount of the composition as defined in claim 1 dissolved in an aqueous medium.

12. A method of treating hypoglycaemia associated with ovine or bovine ketosis, which method comprises administering to the animal suffering therefrom a therapeutically effective amount of the composition as defined in claim 1 dissolved in an aqueous medium.

5,008,249

THERAPEUTIC METHOD OF STIMULATING DIGESTIVE TRACT CONTRACTILE MOTION IN MAMMALS

Satoshi Omura, Tokyo, and Zen Itoh, Maebashi, both of Japan, assignors to Kitasato Kenkyusho, Tokyo, Japan

Filed Aug. 25, 1986, Ser. No. 899,985

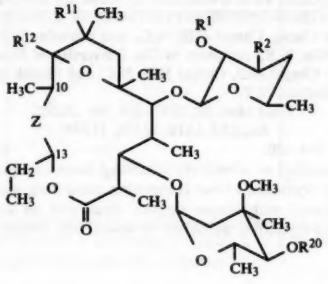
Claims priority, application Japan, Aug. 31, 1985, 60-190958; Feb. 28, 1986, 61-41413; May 31, 1986, 61-124739

The portion of the term of this patent subsequent to Jun. 30, 2004, has been disclaimed.

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—29 **14 Claims**

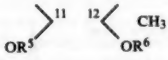
1. A therapeutic method of stimulating digestive tract contractile motion in mammals which comprises administering orally or non-orally to mammals in need of such treatment an effective amount of a digestive tract contractile motion stimulant composition comprising a pharmaceutically acceptable carrier and an effective digestive contractile motion stimulating amount of a compound having the formula:



wherein R^1 is selected from the group consisting of:
- a hydrogen atom,
- an acyl radical of C_{1-5} aliphatic carboxylic acid,
- a C_{6-12} aroyl radical,
- a C_{1-6} alkylsulfonyl radical,
- a C_{2-12} dialkyloxyphosphoryl radical, and
- a C_{12-24} diaryloxyphosphoryl radical;

R^2 is selected from the group consisting of:
- a hydrogen atom,
- a C_{1-6} alkanoyl radical which may be substituted by C_{1-3} alkoxycarbonyl radical,
- a C_{6-12} aroyl radical,
- a C_{1-6} alkylsulfonyl radical,
- a C_{6-12} arylsulfonyl radical,
- a C_{7-20} aralkylsulfonyl radical, and
- a C_{1-3} alkyl radical which may be substituted by C_{2-6} alkoxy radical;

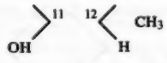
wherein Z stands for the formula:



where in R^5 is selected from the group consisting of:
- a hydrogen atom,
- a C_{1-6} alkanoyl radical,
- a C_{6-12} aroyl radical,
- a C_{1-6} alkylsulfonyl radical,
- a C_{6-12} arylsulfonyl radical,
- a C_{7-20} aralkylsulfonyl radical, and
- a C_{1-3} alkyl radical which may be substituted by C_{1-4} alkylthio radical,

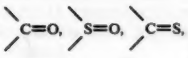
and R^6 is selected from the group consisting of:
- a hydrogen atom,
- a C_{1-6} alkanoyl radical; and
- a C_{1-3} alkyl radical which may be unsubstituted by C_{1-4} alkylthio radical,

or wherein Z stands for the formula:



or Z stands for the for the formula:

wherein Y stands for the formula B-R^8 (wherein R^8 stands for C_{6-12} aryl radical)



or the formula:

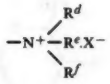
wherein each of R^9 and R^{10}, which may e the same or different, stands for a hydrogen atom or a C_{1-6} alkyl radical;

wherein R^b is selected from the group consisting of:
- a hydrogen atom and
- a C_{1-6} alkyl radical;

and wherein R^c is selected from the group consisting of:
- a hydrogen atom,
- a C_{2-6} alkyl radical which may be substituted with one or more hydroxyl radicals,
- a C_{2-6} alkenyl radical, and
- a C_{2-6} alkynyl radical;

or together R^b and R^c from a C_{3-6} cyclic alkylamino radical together with the adjacent nitrogen atom; or

R^a stands for the formula



wherein R^d is a C_{1-6} alkyl radical, and R^e and R^f, which may be the same or different are selected from the group consisting of:
- a hydrogen atom,
- a C_{1-6} alkyl radical which may be substituted by hydroxyl radical, carboxy radical, cyano radical, or halogen, a C_{3-5} cycloalkyl radical, or a C_{1-3} alkoxycarbonyl radical;
- a C_{7-20} aralkyl radical;
- a C_{2-6} alkenyl radical; and
- a C_{2-6} alkynyl radical; or

together R^e and R^f form a C_{5-7} cyclic alkylamino radical with the adjacent nitrogen atom;

X stands for an anion; and

R^{11} and R^{12} each represent a hydrogen atom or both taken together form a chemical bond.

5,008,250

NEW AVERMECTINS WITH A CLEAVED FURAN RING AND AN 8A HYDROXY GROUP

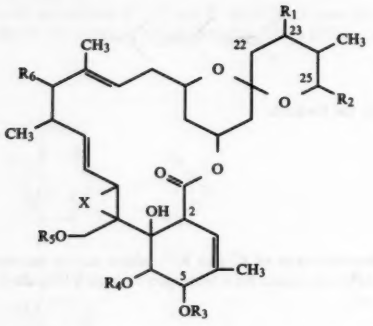
Michael H. Fisher, Ringoes; Matthew J. Wyvratt, Mountainside, and Helmut Mrozik, Matawan, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 25, 1988, Ser. No. 198,271

Int. Cl.[5] A61K *31/35, 31/70;* C07H *17/08*

U.S. Cl. 514—30 **14 Claims**

1. A compound having the formula:



wherein the broken line at the 22,23-position indicates a single or double bond;

R_1 is H or hydroxy; the hydroxy being present only when said broken line indicates a single bond;

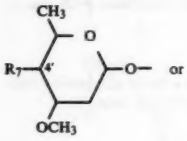
R_2 is methyl, ethyl, iso-propyl or sec-butyl

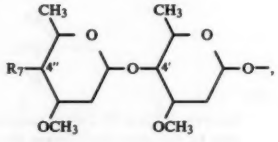
R_3 is hydrogen, methyl or acetyl;

R_4 and R_5 are hydrogen or acetyl;

X is oxygen or a double bond;

R_6 is hydroxy,





where R_7 is hydroxy, NR_8R_9, wherein R_8 and R_9 are independently hydrogen, loweralkyl, loweralkanoyl, loweralkyl sulfonyl or substituted benzenesulfonyl, wherein the substituent is halogen or $R_{10}COO$—, wherein R_{10} is a loweralkyl, phenyl or loweralkyl substituted phenyl.

13. A method for the treatment of insect infestations of plants which comprises treating such plants or the soil in which they grow with an effective amount of a compound of claim 1.

5,008,251

METHOD OF TREATING AUTISM

Harry E. Gruber, San Diego, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 79,657, Jul. 29, 1987, Pat. No. 4,912,092, which is a continuation-in-part of Ser. No. 845,627, Mar. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 646,785, Sep. 4, 1984, abandoned. This application Aug. 31, 1989, Ser. No. 401,156

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—43 **11 Claims**

1. A method for treatment of autism in a patient suffering from said autism which comprises administration to said patient of at least about 1 mg/kg/day of a drug selected from the group consisting of AICA riboside, AICA ribotide, ribavirin and ribavirin monophosphate.

5,008,252

PROCESS FOR INHIBITING HERPES SIMPLEX VIRUS-SPECIFIED THYMIDINE KINASE

Yung-chi Cheng, Chapel Hill, N.C., and Miroslav Bobek, Williamsville, N.Y., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C. and Health Research, Inc., Buffalo, N.Y.

Filed Mar. 20, 1987, Ser. No. 28,507

Int. Cl.[5] A61K *31/70, 31/045*

U.S. Cl. 514—50 **14 Claims**

1. A method of selectively inhibiting herpes simplex virus-specified thymidine kinase comprising contacting mammalian cells infected with herpes simplex virus with an amount of 5'-ethynyl-thymidine sufficient to selectively inhibit said kinase.

5,008,253

SULFOAMINO DERIVATIVES OF CHONDROITIN SULFATES OF DERMATAN SULFATE AND OF HYALURONIC ACID AND THEIR PHARMACOLOGICAL PROPERTIES

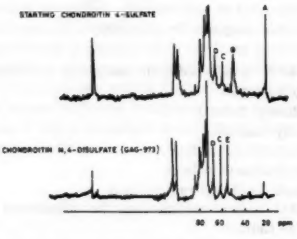
Benito Casu; Giangiacomo Torri, both of Milan; Annamaria Naggi, Legnano; Marisa Mantovani, Villa Guardia; Rodolfo Pescador, Milan; Roberto Porta, Cernobbio, and Giuseppe Prino, Milan, all of Italy, assignors to Crinos Industria Farmacobiologica SPA, Villa Guardia, Italy

Filed May 2, 1989, Ser. No. 346,502

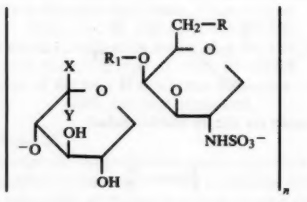
Claims priority, application Italy, May 2, 1988, 20412 A/88

Int. Cl.[5] A61K *31/00;* C07H *1/00, 15/00;* C08B *37/00*

U.S. Cl. 514—54 **12 Claims**



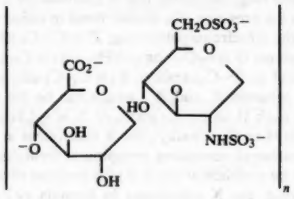
1. Synthetic sulfoamino derivatives of glycosaminoglycans selected from the group consisting of chondroitin sulfates A and C, their mixtures, dermatan sulfate and chondroitin sulfate B, the dimeric units of which have the following formula:



(I)

wherein R represents OH, SO_3^-, R_1 represents H, SO_3^-, Y represents H, COO^-, and X represents H, COO^-.

2. Synthetic sulfoamino derivatives of the hyaluronic acid, the dimeric units of which have the formula:



(II)

10. Pharmaceutical composition, comprising, a glycosaminoglycan derivative according to claims 1 or 2, together with pharmaceutically acceptable excipients.

5,008,254

SUGAR BEET PECTINS AND THEIR USE IN COMESTIBLES

Michael K. Weibel, 120 Gallows Hill Rd., Redding, Conn. 06896

Continuation-in-part of Ser. No. 334,596, Apr. 6, 1989, Pat. No. 4,923,981, which is a continuation-in-part of Ser. No. 62,445, Jun. 15, 1981, abandoned, which is a continuation-in-part of Ser. No. 512,940, Jul. 12, 1983, Pat. No. 4,831,127, which is a continuation-in-part of Ser. No. 414,931, Sep. 3, 1982, abandoned. This application Nov. 1, 1989, Ser. No. 430,166

Int. Cl.[5] **C08B** *37/06;* **A61K** *31/725;* **A21D** *2/18*

U.S. Cl. 514—57 **29 Claims**

1. Sugar beet pectin having at least one of the following properties:

(a) low molecular weight;

(b) highly acetylated;

(c) many hydrophobic domains;

(d) ferulic acid content up to about 3% by weight; and

(e) relatively low viscosity at about 10% by weight

said sugar beet pectin having been prepared by:

suspending sugar beet plant material in an aqueous medium to form a suspension;

adjusting the pH of said suspension to a value less that about 4.5 or greater than about 9.0;

maintaining said suspension at a temperature greater than about 125° C. for from about 15 to about 600 seconds;

subjecting said suspension to mechanical shearing; and

isolating said sugar beet pectin from said suspension.

5,008,255

METHOD FOR ENHANCING SOLUBILITY OF TRIMETHOPRIM WITH SODIUM SULFACETAMIDE, AND SYNERGISTIC PHARMACEUTICAL COMPOSITIONS DERIVED THEREFROM

John G. Edwards, Cleburne; Wesley W. Han, and Yusuf Ali, both of Fort Worth, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 296,270, Jan. 12, 1989, abandoned, which is a continuation of Ser. No. 96,682, Sep. 14, 1987, abandoned, which is a continuation of Ser. No. 946,344, Dec. 24, 1986, abandoned. This application Feb. 14, 1990, Ser. No. 479,827

Int. Cl.[5] **A61K** *31/63, 31/505*

U.S. Cl. 514—155 **5 Claims**

1. An aqueous pharmaceutical composition consisting essentially of 0.15–1.0 wt.% trimethoprim and 3.0–30.0 wt.% sodium sulfacetamide, said composition having a pH range of from 6.0 to 6.5.

5,008,256

SALTS OF RANITIDINE AND COMPLEXES OF BISMUTH WITH CARBOXYLIC ACIDS, AND PHARMACEUTICAL COMPOSITIONS THEREOF

John W. Clitherow, Sawbridgeworth, England, assignor to Glaxo Group Limited, England

Filed Jul. 17, 1989, Ser. No. 380,378

Claims priority, application United Kingdom, Jul. 18, 1988, 8817098; Mar. 1, 1989, 8904686

Int. Cl.[5] **C07F** *9/94;* **C07D** *307/52, 307/54*

U.S. Cl. 514—184 **17 Claims**

1. A salt formed between ranitidine and a complex of bismuth with a carboxylic acid, or a solvate of such a salt.

7. A pharmaceutical composition for the treatment of a gastrointestinal disorder comprising an effective amount for treatment of said disorder of a salt formed between ranitidine and a complex of bismuth with a carboxylic acid, or a solvate of such a salt, together with at least one pharmaceutically acceptable carrier or diluent.

5,008,257

BRAIN-SPECIFIC DRUG DELIVERY

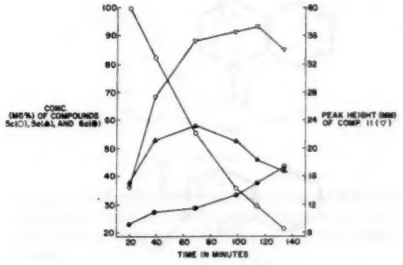
Nicholas S. Bodor, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Division of Ser. No. 665,940, Oct. 29, 1984, Pat. No. 4,824,850, which is a continuation-in-part of Ser. No. 379,316, May 18, 1982, Pat. No. 4,479,932, Ser. No. 461,543, Jan. 27, 1983, abandoned, Ser. No. 475,493, Mar. 15, 1983, Pat. No. 4,622,218, and Ser. No. 516,382, Jul. 22, 1983, Pat. No. 4,540,564. This application Jan. 11, 1989, Ser. No. 295,938

Claims priority, application Canada, May 16, 1983, 428192

Int. Cl.[5] **A61K** *31/43, 31/545*

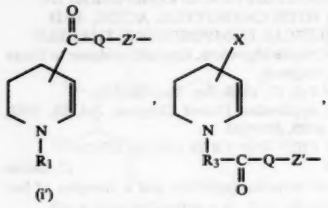
U.S. Cl. 514—192 **28 Claims**



1. A compound of the formula

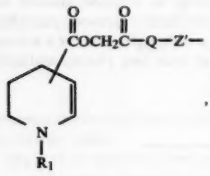
$$D—[DHC]_n \qquad \text{(Ia)}$$

or a nontoxic pharmaceutically acceptable salt thereof, wherein D is the residue of a centrally acting drug having antibiotic properties, said drug being a penicillin or a cephalosporin, said drug containing at least one reactive carboxyl functional group, said residue being characterized by the absence of a hydrogen atom from at least one of the reactive carboxyl functional groups in said drug; n is a positive integer equal to the number of said functional groups from which a hydrogen atom is absent; and [DHC] is the reduced, biooxidizable, blood-brain barrier penetrating, lipodial form of a dihydropyridine⟷pyridinium salt redox carrier, [DHC] being attached directly to the available oxygen atom of the carboxyl functional group in the drug residue, [DHC] being a radical of the formula

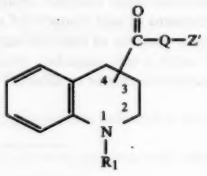


(i')

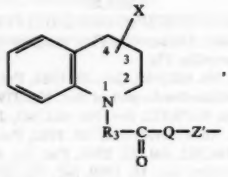
(ii')



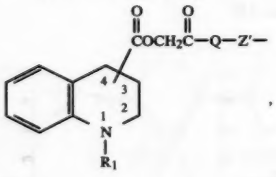
(iii')



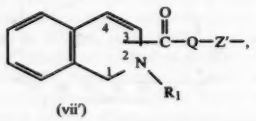
(iv')



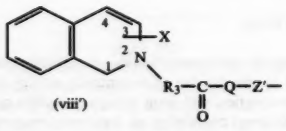
(v')



(vi')

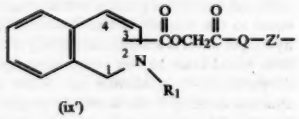


(vii')



(viii')

and



(ix')

wherein the dotted line in formulas (i'), (ii') and (iii') indicates the presence of a double bond in either the 4 or 5 position of the dihydropyridine ring; the dotted line in formulas (iv'), (v') and (vi') indicates the presence of a double bond in either the 2 or 3 position of the dihydroquinoline ring; Z' is C_1–C_8 straight or branched alkylene; Q is —O— or —NH—; R_1 is C_1–C_7 alkyl, C_1–C_7 haloalkyl or C_7–C_{10} aralkyl; R_3 is C_1–C_3 alkylene; X is —CONR'R" wherein R' and R", which can be the same or different, are each H or C_1–C_7 alkyl, or X is —CH=NOR"' wherein R"' is H or C_1–C_7 alkyl; the X subsitutent in formula (ii') and the carbonyl-containing grouping in formulas (i') and (iii') can each be attached at the 2, 3 or 4 position of the dihydropyridine ring; the X substituent in formula (v') and the carbonyl-containing grouping in formulas (iv') and (vi') can each be attached at the 2, 3 or 4 position of the dihydroquinoline ring; and the X substituent in formula (viii') and the carbonyl-containing grouping in formulas (vii') and (ix') can each be attached at the 1, 3 or 4 position of the dihydroisoquinoline ring.

5,008,258

CEPHALOSPORIN DERIVATIVES

Thomas G. C. Bird, Witry-les-Reims, and Frederick H. Jung, Rilly la Montagne, both of France, assignors to I.C.I.-Pharma, Gergy Cedex, France

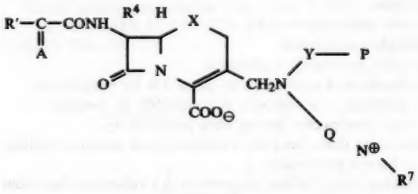
Filed Jul. 18, 1988, Ser. No. 221,945

Claims priority, application European Pat. Off., Jul. 23, 1987, 87401721.3

Int. Cl.[5] **C07D** *501/48;* **A61K** *31/545*

U.S. Cl. 514—201 **7 Claims**

1. A cephalosporin compound of the formula (Iz):



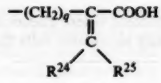
wherein:

X is sulphur or sulphinyl;

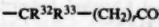
R^1 is 2-aminothiazol-4-yl or 2-aminooxazol-4-yl each optionally substituted in the 5-position by fluorine, chlorine or bromine, or R^1 is 5-aminoisothiazol-3-yl, 5-amino-1,2,4-thiadiazol-3-yl, 3-aminopyrazol-5-yl, 3-aminopyrazol-4-yl, 2-amino-pyrimidin-5-yl, 2-aminopyrid-6-yl, 4-aminopyrimidin-2-yl, 2-amino-1,3,4-thiadiazol-5-yl or 5-amino-1-methyl-1,2,4-triazol-3-yl;

A is of the formula=NOR^2 (having the syn configuration about the double bond) wherein R2 is hydrogen, (1–6C)alkyl, (3–8C)cycloalkyl, (1–3C)alkyl(3–6C)cycloalkyl, (3–6C)cycloalkyl(1–3C)alkyl, (3–6C)alkenyl, optionally substituted by carboxy, (5–8C)cycloalkenyl, (3–6C)alkynyl, (2–5C)alkylcarbamoyl, phenylcarbamoyl, benzylcarbamoyl, di(1–4C)alkyl-carbamoyl(1–4C)alkyl, (1–4C-)haloalkylcarbamoyl (1–4C)-alkyl, (1–3C)haloalkyl, (2–6C)hydroxyalkyl, (1–4C)alkoxy(2–4C)alkyl, (1–4C)alkylthio(2–4C)alkyl, (1–4C)alkanesulphinyl(1–4C)alkyl, (1–4C)alkane-sulphonyl(1–4C)alkyl, amino(2–6C)alkyl, azido(2–6C)alkyl, ureido(2–6C)alkyl, (1–4C)-alkylamino(-1–6C)alkyl, (2–8C)dialkylamino(2–6C) alkyl, (1–5C-)cyanoalkyl, 3-amino-3-carboxypropyl, 2-(amidino)ethyl, 2-(amidinothio)ethyl, 2-(N-aminoamidinothio)ethyl, tetrahydropyran-2-yl, thietan-3-yl, 2-oxopyrrolidinyl, or 2-oxotetrahydrofuranyl,

or —R2 may be of the formula IV:



in which q is 1 or 2 and R24 and R25 are hydrogen or (1–4C)alkyl, or —R2 may be of the formula V:



in which r is 0–3, R32 is hydrogen, (1–3C)alkyl or methylthio, R33 is hydrogen, (1–3C)alkyl, (3–7C)cycloalkyl, cyano, carboxy, (2–5C)carboxyalkyl or methanesulphonylamino, or R32 and R33 are joined to form, together with the carbon to which they are attached, a (3–7C)carbocyclic ring, and R34 is hydroxy, amino, (1–4C)alkoxy, (1–4C) alkylmino, or of the formula NHOR35 in which R35 is hydrogen or (1–4C)alkyl;

or A may be of the formula =CH.R3 wherein R3 is hydrogen, halogen, (1–6C)alkyl, (3–7C)cycloalkyl, (2–6C)alkenyl, (3–7C)cycloalkenyl, phenyl or benzyl;

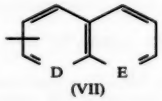
R^4 is hydrogen, methoxy or formamido;

Q is a 5 or 6 membered ring containing NR^7 and 0 to 3 further heteroatoms selected from nitrogen, oxygen and sulphur and optionally fused on an available carbon-carbon or carbon-nitrogen bond to a benzene ring or a ring of the formula (VI):

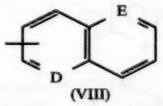
(VI)

wherein T, U and V are selected from oxygen, sulphur, nitrogen, carbon, —NH— and —CH—;

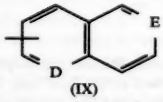
or ring Q is of the formula VII–XXVI:



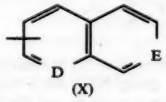
(VII)



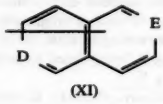
(VIII)



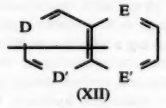
(IX)



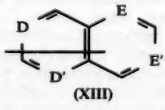
(X)



(XI)



(XII)



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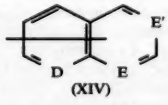

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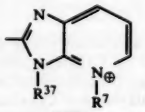

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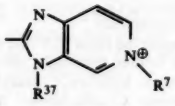

(XVI)

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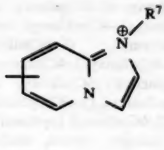

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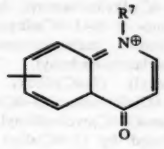

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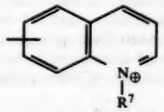

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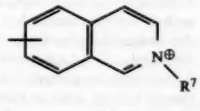

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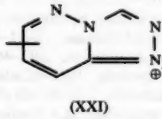
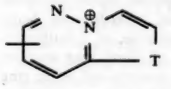
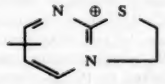


(XXI)

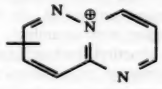


(XXII)

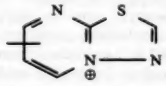


(XXIII)

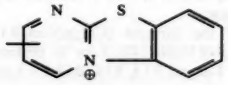
— = Single or double bond



(XXIV)



(XXV)



(XXVI)

wherein one of D, D^1, E and E^1 represents NR^7 and the remainder represent uncharged nitrogen atoms and R^{37} represents hydrogen or a group R^6 (as hereinafter defined);

Ring Q and the rings VI–XXVI being optionally substituted by at least one group R^5 or R^6 (as hereinafter defined);

on a carbon atom or atoms available for substitution by 1,2 or 3 groups R5 wherein R5 is halogen, (1–6C)alkyl, carboxy, (2–6C)alkoxycarbonyl, (2–6C)alkoxycarbonyl(1–4C)alkyl, (1–6C)-alkoxy, (1–6C)alkylthio, cyano, (1–4C-)cyanoalkyl, amino, (1–6C)-alkylamino, (2–8C)dialkylamino, phenyl (1–4C)alkylamino, nitrophenyl(1–4C)alkylamino, (3–6C)alkenylamino, amino(1–6C)alkylamino, (1–6C)alkoxy(1–6C)alkylamino, hydroxy(1–6C)alkylamino, hydroxy, mercapto, carbamoyl, (2–6C) alkylcarbamoyl, (3–10C)dialkylcarbamoyl, phenylthio and heteroarylthio (wherein heteroaryl is furan, thiophene, imidazole, thiazole, pyrazole, thiadiazole, pyridine, pyrimidine, pyrazine or pyrimidine) wherein when more than one group R5 is present these may be the same or different;

on an uncharged nitrogen atom available for substitution by a group R6 wherein R6 is (1–6C)alkyl, phenyl or benzyl;

R7 is hydrogen, (1–6C)alkyl (optionally substituted by carboxy, (1–6C)alkoxycarbonyl, carbamoyl, mono- or di-(1–4C)alkylcarbamoyl, hydroxy, (1–4C)alkoxy, amino, mono- or di-(1–4C)alkyamino, (1–4C)alkanoyl, benzoyl, cyano, carboxyaminocarbonyl, (1–6C)alkoxycarbonylaminocarbonyl, (1–4C)alkoxy(2–4C)alkoxy or phenyl), (1–6C)alkoxy, phenyl(1–6C)alkoxy, amino, (1–6C)alkylamino, (3–6C)cycloalkyl, (3–6C)cycloalkenyl, cyano(3–6C)cycloalkenyl, (2–6C)alkenyl (optionally substituted by (1–6C)alkyl, halogen, cyano, carbamoyl, mono- or di-(1–4C)alkylcarbamoyl, piperidinocarbonyl or morpholinocarbonyl), 2-ureidoethyl, 2-thioureidoethyl, 2-(thioacetylamino)-ethyl, sulphamoyl, 2-amino-2-carboxyethyl, acetylaminomethyl, phthalimidomethyl, 4-5-dihydro-imidazol-2-ylmethyl, 3,4,5,6-tetrahydropyrimidin-2-ylmethyl, 2-(1,2,3,6-tetrahydro-2,6-dioxopurin-7-ylethyl, 2-hydroxyiminopropyl (syn or anti) [(1–4C)alkoxyimino]-propyl (syn or anti) or phenyl,

or R7 is of the formula —$(CH_2)_2$—NR8R9R10 in which R8, R9 and R10 are (1–4C)alkyl,

or R7 is of the formula —$(CH_2)_s$—R11 in which s is 0–2 and R11 is pyridine, pyridazine, pyrimidine, pyrazine, 1,2,5,6-dihydro-5,6-dioxo-1,2,4-triazine, 2-[(1–4C)alkyl]-1,2,5,6-dihydro-5,6-dioxo-1,2,4-triazine, 1-[(1–4C)alkyl]tetrazole, furan, thiophene, pyrrole, 1-[(1–4C)alkyl]pyrrole, oxazole, thiazole, imidazole, 1-[1–4C)alkyl]imidazole, isoxazole, isothiazole, pyrazoke, 1,2,3-thiadiazoke, 1-[1–4C)alkyl]pyrazole, benzfuran, benzthiophene, indole, oxindole, 1-[(1–4C)alkyl]indole, benzoxazole, benzthiazole, benzimidazole, 1-[(1–4C)alkyl]benzimidazole, or 3,4-dihydro-4-oxo-2H-benzo[e]oxazine (each of these ring systems being linked to $(CH_2)_s$ through carbon and each ring system being optionally substituted by halogen, (1–6C)alkyl, (1–4C)haloalkyl, (3–6C)cycloalkyl, (3–6C)cycloalkyl(1–4C)alkyl, (2–6C)alkenyl, carboxy, (2–6C)alkoxycarbonyl, (1–6C)alkoxy, cyano, (2–6C)-cyanoalkenyl, carbamoyl, mono-or di-(1–4C)alkyl-carbamoyl, (1–4C)alkanoylamino, guanidino, hydroxy, nitro or amino),

or R7 is 2-guanidino-thiazole-4-ylmethyl, hydroxybenzoylmethyl, 2-thenyl, 2-imidazolylmethyl or cinnamyl (each optionally substituted by halogen, nitro or carbamoyl),

or R7 is —$(CH_2)_t$NHCOR12 or —$(CH_2)_t$S(O)$_u$—R12 in which t is 1–6, u is 0, 1 or 2 and R12 is (1–6C)alkyl or (1–6C)alkoxy,

or R7 is of the formula $(CH_2)_2$N=CR13NR14R15 or $(CH_2)_v$C(=NR13)NR14R15 or a tautomer thereof in which v is 1–6 and R13, R14, R15 are hydrogen or (1–4C)alkyl,

(wherein when R7 is or contains a phenyl group, the phenyl group is optionally substituted by 1 or 2 groups selected from halogen, (1–6C)alkyl, (1–6C)alkoxy, amino, carboxy, nitro, carbamoyl, cyano, trifluoromethyl, aminomethyl, (1–4C)alkanoyl, (1–4C)-alkanoylamino, halo(1–4C)alkyl, (2–6C)alkoxycarbonyl, mono- or di-(1–4C)alkylcarbamoyl, mesyl, vinyl, sulpho, sulphamoyl or mono- or di(-1–4C)alkylsulphamoyl) or when the positively charged nitrogen atom occurs at the junction between fused rings R7 is absent;

Y is straight or branched (1–6C)alkylene optionally substituted by cyano, carboxy, (1–4C)alkoxycarbonyl, nitro, halogen, carbamoyl, mono- or di-(1–4C)alkylcarbamoyl or trifluoromethyl; or Y is —CH_2CH_2NHCO— or a bond;

P represents:

(i) a benzene ring optionally fused to a further benzene ring (so forming a naphthyl group) said ring system substituted by groups W and Z which are ortho with respect to one another wherein W is hydroxy or an in vivo hydrolysable ester thereof and Z is hydroxy or an in vivo hydrolysable ester thereof;

ring system P optionally being further substituted by (1–4C)alkyl, halogen, hydroxy, cyano, trifluoromethyl, nitro, amino, mono- or di-(1–4C)alkylamino, formyl, (1–4C)alkanoyl, (1–4C)alkoxy, (1–4C)alkylthio, (1–4C)alkanoyloxy, carbamoyl or mono- or di(1–4C)alkylcarbamoyl;

and the N-oxides thereof where chemically possible;

and pharmaceutically acceptable salts thereof.

5,008,259

CEPHALOSPORIN COMPOUNDS

Patrice J. Siret, Reims; Frederick H. Jung, Rilly la Montagne, both of France, and William Bell, Macclesfield, England, assignors to Imperial Chemical Industries PLC, London, England and I.C.I.-PHARMA, Gergy Cedex, France

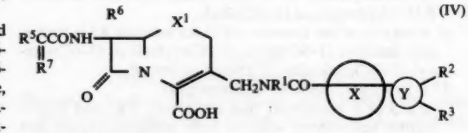
Filed May 10, 1989, Ser. No. 349,663

Claims priority, application United Kingdom, May 10, 1988, 88401143

Int. Cl.[5] **C07D** *501/38;* **A61K** *31/545*

U.S. Cl. 514—202 **8 Claims**

1. A compound of formula (IV)



(IV)

or a salt or ester thereof;

wherein:

X^1 is sulphur or sulphinyl;

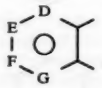
R^1 is hydrogen, C_{1-4}alkyl optionally substituted by halo, hydroxy, C_{1-4}alkoxy, carboxy, amino, cyano, C_{1-6}alkanoylamino, phenyl or heteroaryl, or R^1 is C_{2-6}alkenyl;

R^2 is hydroxy or an in vivo hydrolyzable ester thereof;

R^3 is ortho to R^2 and is hydroxy or an in vivo hydrolyzable ester thereof;

X is a ring selected from a group of the sub-formulae (a)–(b):

(a)



(b)

wherein A is CH or a nitrogen atom; B is oxygen, sulphur or a group NR^4; zero, one or two of D, E, F and G are nitrogen atoms and the remainder are CH groups; or X is a pyrazinone, pyridinone, pyridazinone or pyrimidinone ring, or is a thione equivalent of such a ring, said rings having a substituent R^4 on one nitrogen atom, or is pyranone, or pyranthione; the ring X being fused by any two adjacent carbon atoms to ring Y;

R^4 is hydrogen, hydroxy, C_{1-6}alkoxy, phenoxy, C_{2-6}alkenyl or C_{1-6}alkyl, (any of these groups being optionally substituted by hydroxy, C_{1-6}alkoxy, cyano, amino, C_{1-6}alkylamino, di-C_{1-6}alkylamino, carboxy, C_{1-6}alkoxycarbonyl, C_{1-6}alkanoyloxy, carbamoyl, C_{1-6}alkylcarbamoyl, di-C_{1-6}alkylcarbamoyl, C_{1-6}alkoxycarbonylamino, phenyl phenylC_{1-6}alkyl, carboxyaminocarbonyl, C_{1-6}alkoxycarbonylaminocarbonyl, benzoyl or C_{3-6}cycloalkyl) or R^4 is phenyl, C_{3-6} cycloslkyl, amino, C_{1-6}alkylamino or di-C_{1-6}alkylamino:

wherein the fused X-Y ring system and/or any phenyl group is further optionally substituted by C_{1-6}alkyl, halo, hydroxy, hydroxy, C_{1-6}alkyl, cyano, trifluoromethyl, nitro, amino, C_{1-6}alkylamino, di-C_{1-6}alkylamino, C_{1-6}alkanoyl, C_{1-6}alkoxy, C_{1-6}alkylthio, C_{1-6} alkanoyloxy, carbamoyl,

C_{1-6}alkylcarbamoyl, di-C_{1-6} alkyl carbamoyl, carboxy, carboxy C_{1-6} alkyl, C_{1-6}alkoxycarbonyl C_{1-6}alkyl, sulpho sulpho-C_{1-6}alkyl, sulphonamido C_{1-6}alkyl, C_{1-6}alkoxycarbonyl, C_{1-6}alkanoylamino, thioureido or amidino;

ring Y is a 6-membered heteroaryl ring containing only ring atoms selected from carbon and one or two nitrogen atoms, substituted on adjacent carbon atoms by groups R^2 and R^3;

wherein either ring of the fused X-Y ring system is bonded via a carbon atom to the amide linkage;

R^5 is a 2-aminothiazol-4-yl or 2-aminooxazol-4-yl each optionally substituted in the 5-position by fluorine, chlorine or bromine, or R^5 is 5-aminoisothiazol-3-yl, 5-amino-1,2,4-thiadiazol-3-yl, 3-aminopyrazol-5-yl, 3-aminopyrazol-4-yl, 2-aminopyrimidin-5-yl, 2-aminopyrid-6-yl, 4-aminopyrimidin-2-yl, 2-amino-1,3,4-thiadiazol-5-yl or 5-amino-1-methyl-1,2,4-triazol-3-yl;

R^6 is hydrogen, methoxy or formamido; and

R^7 is of the formula =N.O.R^8 (having the syn configuration about the double bond) wherein R^8 is hydrogen, (1-6C)alkyl, (3-8C)cycloalkyl, (1-3C)alkyl(3-6C) cycloalkyl, (3-6C)cycloalkyl(1-3C)alkyl, (3-6C)alkenyl, optionally substituted by carboxy, (5-8C)cycloalkenyl, (3-6C)alkynyl, (2-5C)alkylcarbamoyl, phenylcarbamoyl, benzylcarbamoyl, (1-4C)alkylcarbamoyl(1-4C)alkyl, di(1-4C)alkylcarbamoyl(1-4C)alkyl, (1-4C)haloalkylcarbamoyl(1-4)alkyl, (1-3C)haloalkyl, (2-6C)hydroxyalkyl, (1-4C)alkoxy(2-4C)alkyl, (1-4C)alkylthio(2-4C)alkyl, (1-4C)alkenesulphinyl(1-4C)alkyl, (1-4C)alkanesulphonyl(1-4C)alkyl, (2-6C)aminoalkyl, (1-4C)alkylamino(1-6C)alkyl, (2-8C)dialkylamino(2-6C)alkyl, (1-5C)cyanoalkyl, 3-amino-3-carboxypropyl, 2-(amidinothio)ethyl, 2-(N-aminoamidinothio)ethyl, tetrahydropyran-2-yl, thietan-3-yl, 2-oxopyrrolidinyl, or 2-oxotetrahydrofuranyl, or R^8 is of the formula V:

$$-(CH_2)_q-C(COOH)=CR^9R^{10} \qquad V$$

wherein q is one or two and R^9 and R^{10} are independently hydrogen or C_{1-4}alkyl; or R^8 is of the formula VI:

$$-CR^{11}R^{12}-(CH_2)_1-COR^{13} \qquad VI$$

wherein r is 0–3, R^{11} is hydrogen, (1-3C)alkyl or methylthio, R^{12} is hydrogen, (1-3C)alkyl, (3-7C) cycloalkyl, cyano, carboxy, (2-5C)carboxyalkyl or methanesulphonylamino, or R^{11} and R^{12} are joined to form, together with the carbon to which they are attached, a (3-7C)carbocyclic ring, and R^{13} is hydroxy, amino, (1-4C)alkoxy, (1-4C)alkylamino or of the formula $NHOR^{14}$ in which R^{14} is hydrogen or (1-4C)alkyl;

or R^7 may be of the formula =CH.R^{15} wherein R^{15} is hydrogen, halogen, (1-6C)alkyl, (3-7C)cycloalkyl, (2-6C)alkenyl, (3-7C)cycloalkenyl, phenyl or benzyl.

5,008,260

CEPHEM DERIVATIVES

Hiroshi Yamauchi; Isao Sugiyama; Isao Saito; Seiichiro Nomoto; Takashi Kamiya; Yoshimasa Machida, and Shigeto Negi, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

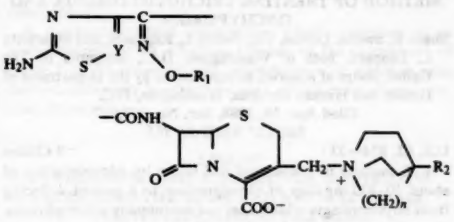
Division of Ser. No. 818,824, Jan. 14, 1986, Pat. No. 4,748,171. This application Mar. 16, 1988, Ser. No. 167,153

Claims priority, application Japan, Jan. 14, 1985, 60-3181; Apr. 11, 1985, 60-75333; Aug. 9, 1985, 60-174326

Int. Cl.[5] C07D *501/38*; A61K *31/545*

U.S. Cl. 514—202 **10 Claims**

1. A cephem derivative represented by the formula:



wherein n is 1 or 2, Y is CH, R_1 is lower alkyl, lower alkenyl, lower alkynyl or a carboxyl-substituted, a carbamoyl-substituted or a cyclopropyl-substituted lower alkyl group, and R_2 is hydroxyl, hydroxy-substituted lower alkyl or carbamoyl, or a pharmaceutically acceptable salt thereof.

5,008,261

AGENTS FOR REPELLING INSECTS AND MITES

Bernd-Wieland Krüger, Wuppertal; Klaus Sasse, Bergisch-Gladbach; Franz-Peter Hoever; Günther Nentwig, both of Cologne, and Wolfgang Behrenz, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

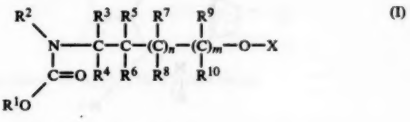
Division of Ser. No. 183,941, Apr. 20, 1988, Pat. No. 4,900,894. This application Oct. 18, 1989, Ser. No. 423,070

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1987, 3714058; Jan. 16, 1988, 3801082

Int. Cl.[5] C07D *211/22*; A01N *43/40*

U.S. Cl. 514—212 **4 Claims**

3. In a method of repelling insects and mites the improvement wherein the insect and mite repellent composition comprises at least one substituted α,ω-aminoalcohol derivative of the formula (I)



(I)

in which

X represents hydrogen, COR^{11}, $COOR^{12}$ or R^{13},

R^1 represents an optionally substituted alkyl, alkenyl or alkinyl radical,

R^2, R^{11}, R^{12} and R^{13} are identical or different and represent an optionally substituted alkyl or alkenyl radical,

R^3 to R^{10} are identical or different and represent hydrogen, or represent an optionally substituted alkyl radical,

substitutents in the case of said optionally substituted alkyl, alkenyl, and alkinyl radicals being selected from the group consisting of alkyl, cycloalkyl, C_1–C_4-alkoxy, halogen, and cyano,

and wherein

R^2 and R^3 or R^3 and r^7 or r^3 and R^5 and

R^7, together with the atoms to which they are bonded, can also form a 5 to 7-membered saturated monocyclic ring which is unsubstituted or substituted or substituted by alkyl, and

n and m are identical or different and denote 0 or 1,

with the proviso that X does not represent hydrogen or R^{13} if n and m represent 0.

5,008,262

METHOD OF TREATING TRICHOTILLOMANIA AND ONCHYPHAGIA

Susan E. Swedo, Lorton, Va.; Judith L. Rapoport, and Henrietta L. Leonard, both of Washington, D.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Apr. 19, 1988, Ser. No. 207,617

Int. Cl.[5] A61K *31/395*

U.S. Cl. 514—217 **8 Claims**

1. A method of preventing nail biting by administration of about 10–300 mg/day of clomipramine to a patient suffering from onychophagia which does not accompany schizophrenia, obsessive compulsive disorder or depression.

5,008,263

DIAZEPINE ANTIALLERGY AGENTS

Kelvin Cooper, Deal, and Michael J. Fray, Nr. Canterbury, both of England, assignors to Pfizer Inc., New York, N.Y.

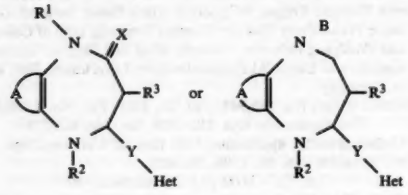
Filed Mar. 20, 1990, Ser. No. 496,393

Claims priority, application United Kingdom, Mar. 23, 1989, 8906813; Nov. 21, 1989, 8926246

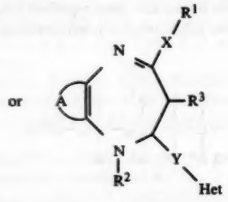
Int. Cl.[5] A61K *31/55*; C07D *521/00*

U.S. Cl. 514—220 **7 Claims**

1. A compound of formula (I), (II) or (III)



(I) (II)



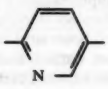
(III)

wherein;

A represents a fused benzene, pyridine, naphthalene, quinoline, thiophene, benzothiophene, pyrazole or isothiazole ring, which ring or rings being optionally substituted by 1 or 2 substituents independently selected from C_1–C_4 alkyl; C_4–C_7 cycloalkyl; halo; perfluoro - (C_1–C_4 alkyl); cyano; (C_1–C_4 alkoxy)-carbonyl; nitro; amino; amino substituted by (C_1–C_4 alkyl) sulfonyl, amino substituted by (C_1–C_4 alkyl)-oxalyl; C_1–C_4 alkoxy - (C_1–C_4 alkyl) imino; hydroxy (C_1–C_4 alkyl), (C_1–C_4 alkoxy)-C_1–C_4 alkyl, (C_1–C_4 alkoxy)-(C_2–C_4 alkoxy)-C_1–C_4 alkyl, —$CONR^5R^6$ wherein R^5 and R^6 are each independently H or C_1–C_6 alkyl, or R^5 is H or C_1–C_4 alkyl and R^6 is C_3–C_7 cycloalkyl, or 2-pyridyl, or R^5 or R^6 are joined together to form, with the nitrogen atom to which they are attached, a morpholino, pyrrolidino or piperidino group; and phenyl, thienyl or pyridyl optionally substituted by halogen, cyano, trifluoromethyl, (C_1–C_4 alkoxy) carbonyl or carbamoyl,

X is O, S or NH

Y is 1, 4 phenylene or a group of formula



R^1 is either H or C_1–C_4 alkyl optionally substituted by a substituent selected from hydroxyl, phenyl, halophenyl, pyridyl, (C_1–C_4 alkoxy) carbonyl, and di (C_1–C_4 alkyl) amino or is C_2–C_4 alkyl substituted by hydroxy or by one or two C_1–C_4 alkoxy groups or $(CH_2)_nCONR^7R^8$ where n=1–4 and R^7 and R^8 are each independently H or C_1–C_4 alkyl.

R^2 is H or C_1–C_4 alkyl;

R^3 is H or C_1–C_4 alkyl;

the fused ring B is an imidazole, triazole, tetrazole, pyrimidine, imidazoline or tetrahydropyrimidine ring, said fused ring B being optionally substituted by 1 or 2 substituents independently selected from C_1–C_4 alkyl, C_1–C_4 haloalkyl, halo and oxo;

and "Het" is pyridyl, 1,2,4-triazolyl or imidazolyl said "Het" rings optionally fused to a benzene, thiazole or pyridine ring and at least one of said rings optionally being substituted with from one to three substituents independently selected from C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, CF_3, CN and formyl; and wherein the dashed line represents an optional bond; and their pharmaceutically acceptable salts.

7. A medicament comprising a compound for antagonising platelet activating factor of claim 1 and a pharmaceutically acceptable diluent or carrier wherein the medicament comprises 0.1 mg to 1000 mg of the claim 1 compound and the remainder is the diluent or carrier.

5,008,264

N-SUBSTITUTED-5,6-DIMETHOXY-1,2-BENZISOXAZOLE-3-PROPANAMINE AND RELATED COMPOUNDS AS ANALGESIC AND HYPOTENSIVE AGENTS

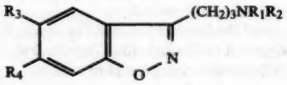
Larry Davis, Sergeantsville, N.J., assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 72,954, Jul. 13, 1987. This application Oct. 9, 1990, Ser. No. 594,575

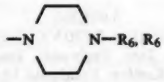
Int. Cl.[5] A61K *31/495, 31/445*; C07D *403/06, 401/14*

U.S. Cl. 514—253 **12 Claims**

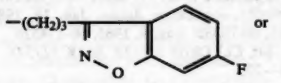
1. A compound having the formula



where -NR_1R_2 taken together is



being aryl, arylloweralkyl, diarylloweralkyl,



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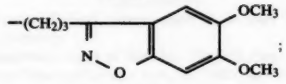


and R_3 and R_4 are each independently methoxy or hydroxy, the term aryl in each occurrence signifying a phenyl group having 0,1,2 or 3 substituents each of which being independently hydroxy, nitro, loweralky, loweralkoxy, halogen or CF_3 with the proviso that said aryl may not be trifluorophenyl or triiodophenyl, or a pharmaceutically acceptable acid addition salt thereof.

5,008,265

2-AMINO-7-(ALICYCLOMETHYL)-3H,5H,-PYRROLO[3,2-D]PYRIMIDIN-4-ONES AND PHARMACEUTICAL USES AND COMPOSITIONS CONTAINING THE SAME

John A. Secrist, III; John A. Montgomery; Steve E. Ealick, all of Birmingham, Ala.; Mark D. Erion, Livingston, and Wayne C. Guida, Fanwood, both of N.J., assignors to BioCryst, Inc., Birmingham, Ala.

Filed Oct. 31, 1989, Ser. No. 429,099

Int. Cl.[5] A61K *31/505;* **C07D** *487/00*

U.S. Cl. 514—258 **13 Claims**

1. A compound of the formula 2-amino-7-(substituted methyl)-3H,5H-pyrrolo[3,2-d]pyrimidin-4-one wherein substituted methyl is $—CH_2—R$ wherein R is a cycloolefin or cycloparafin having up to nine carbon atoms in the ring structure which can be optionally substituted with at least one of halogen, hydroxy, alkoxy, alkyl, or trifluoromethyl.

6. A method for the selective suppression of mammalian T-cell function without diminished effect on humoral immunity which comprises administering to a mammal the compound of claim 1, whereby said compound inhibits purine nucleoside phosphorylase and thereby T-cell formation.

5,008,266

4(3H)-QUINAZOLINONE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

Toshihiro Takahashi, Kawagoe; Tatsuo Horaguchi, Fujimi; Koichi Nakamaru, Ohimachi, and Yoshikuni Suzuki, Ohmiya, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

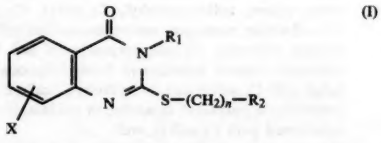
Division of Ser. No. 373,024, Jan. 26, 1988, Pat. No. 4,861,780. This application Jul. 26, 1989, Ser. No. 373,024

Claims priority, application Japan, Jan. 30, 1987, 62-20123; Aug. 20, 1987, 62-205071

Int. Cl.[5] A61K *31/505;* **C07D** *401/12*

U.S. Cl. 514—259 **10 Claims**

1. A compound of formula (I)



(I)

wherein R_1 is a hydrogen atom, a C_1–C_6 alkyl group or a phenyl group; R_2 is a (C_1–C_4) alkoxy substituted phenyl group, pyridyl, benzimidazolyl, furyl, thienyl or quinolyl; n is 1 or 2; or R_2 represents a geranyl group or a dipyridylmethyl group together with the group — (CH_2)n—; and X is a hydrogen atom, a C_1–C_6 alkyl group and pharmaceutically acceptable acid adition salts thereof, provided that when R_1 is phenyl, R_2 does not represent pyridyl, and further provided that when R_1 is C_1–C_6 alkyl, R_2 does not represent (C_1–C_4) alkoxy substituted phenyl.

6. A pharmaceutical composition which comprises as an active ingredient an effective amount of the compound of claim 1 or pharmaceutically acceptable acid addition salts thereof, optionally in admixture with additives for pharmaceutical preparation.

5,008,267

PYRIMIDINEDIONE COMPOUNDS, METHOD OF PRODUCING THE SAME AND ANTIARRYTHMIC AGENTS CONTAINING THE SAME

Tsutomu Katakami, Kamakura; Tatsuro Yokoyama, Yokohama; Michihiko Miyamoto, Yokohama; Haruki Mori, Yokohama; Nobuya Kawauchi, Yokohama; Tadahito Nobori, Yokohama; Kunio Sannohe, Yokohama; Joji Kamiya, Mobara; Masaaki Ishii, Mobara, and Kanji Yoshihara, Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

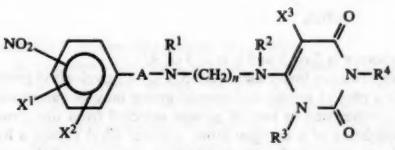
Filed Oct. 24, 1989, Ser. No. 425,730

Claims priority, application Japan, Oct. 29, 1988, 63-271992; Dec. 6, 1988, 63-306840; Dec. 6, 1988, 63-306841; Apr. 18, 1989, 1-096416; Apr. 18, 1989, 1-096417; Apr. 18, 1989, 1-096418; Sep. 6, 1989, 1-229272; Sep. 25, 1989, 1-246317; Sep. 25, 1989, 1-246318

Int. Cl.[5] A61K *31/495, 31/505;* **C07D** *403/04, 239/54*

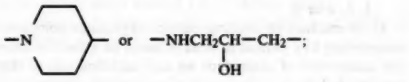
U.S. Cl. 514—269 **12 Claims**

1. A pyrimidinedione compound of the formula (I)

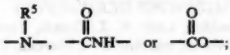


(I)

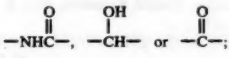
in which A represents $—(CH_2)_m—$, $—B—(CH_2)_k—$, $—D—(CH_2)_l—$,



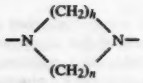
B represents an oxygen or a sulfur atom,



D represents



R^1 and R^2 each independently represent a hydrogen atom, a lower alkyloxycarbonyl group, an unsaturated lower alkyl group or a lower alkyl group, any one of the hydrogen atoms of said alkyl groups may be substituted by a group selected from the group consisting of a hydroxy group; a lower monoalkylamino group; a lower dialkylamino group; a lower alkyloxy group; a lower alkanoyloxy group; a benzoyloxy group; a benzoyloxy group substituted by a halogen atom or a lower alkyloxy group; a phenyl group; a phenyl group substituted by a halogen atom or a lower alkyloxy group; and a lower alkyloxycarbonyl group, or R^1 and R^2 may be so linked as to make an alkylene chain and thus form a heterocyclic structure;

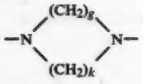


where h is 2 or 3 and n is 2 cr 3;

R^3 and R^4 each independently represent a hydrogen atom or a lower alkyl group;

X^1 and X^2 each independently represent a hydrogen atom, —CO—R^6, a halogen atom, a lower alkyl group, a halogen-substituted lower alkyl group, a hydroxy group, a lower alkyloxy group, a lower alkylthio group, a lower alkyloxycarbonyl group, a carboxy group, a cyano group, an amino group, a lower alkanoyloxy group, a lower alkanoylamino group, a lower alkylsulfonamido group, a lower mono- or di-alkylamino group, a phenyl-substituted lower alkylamino group or an unsaturated lower alkyloxy group;

X^3 represents a hydrogen atom, a nitro group, a methyl group or a cyano group; R^5 represents a hydrogen atom, a lower alkanoyl group, a lower alkylsulfonyl group or a lower alkyl group, or R^1 and R^5 may be so linked as to make an alkylene chain and thus form a heterocyclic structure;



where g is 2 or 3 and k is 2, 3 or 4;

R^6 represents a lower alkyl group, a C_5–C_6 cycloalkyl group or a phenyl group, said phenyl group may be substituted by either one or two of groups selected from the group consisting of a halogen atom, a lower alkyl group, a hydroxy group and a lower alkyloxy group, or a heterocyclic ring;

n represents an integral number 2 or 3; m represents an integral number, 0, 1, 2, 3, or 4; k represents an integral number, 2, 3 or 4; and l represents an integral number, 0, 1, 2, 3 or 4.

12. A method of treating cardic arrythmias comprising administering to a person in need of same an effective amount of the compound of claim **1** or an acid addition salt of the compound of claim **1**.

5,008,268

2-AMINOPYRIMIDINONE DERIVATIVES

Frans E. Janssens, Bonheiden; Ludo E. J. Kennis, Turnhout; Francois M. Sommen, Wortel, and Ann C. J. Dierckx, Kasterlee, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

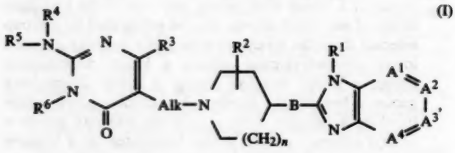
Filed Dec. 26, 1989, Ser. No. 456,391

Claims priority, application United Kingdom, Jan. 9, 1989, 8900380

Int. Cl.[5] **A61K** *31/505, 31/52;* **C07D** *401/14, 403/14*

U.S. Cl. 514—272 **18 Claims**

1. A chemical compound having the formula



(I)

a pharmaceutically acceptable addition salt thereof, and a stereochemically isomeric form thereof, wherein

—A^1=A^2—A^3=A^4— is a bivalent radical having the formula

—CH=CH—CH=CH—,	(a-1)
—N=CH—CH=CH—,	(a-2)
—CH=N—CH=CH—,	(a-3)
—CH=CH—N=CH—,	(a-4)
—CH=CH—CH=N—,	(a-5)
—N=CH—N=CH— or	(a-6)
—CH=N—CH=N—,	(a-7)

wherein one or two hydrogen atoms of said radicals (a-1) to (a-7) each independently from one another may be replaced by halo, C_{1-6}alkyl, C_{1-6}alkyloxy, hydroxy or trifluoromethyl;

R^1 is hydrogen, C_{1-10}alkyl, C_{3-6}cycloalkyl, Ar^1, mono- and di(Ar^1)-C_{1-6}alkyl, or a radical of formula —Alk—G—R^7; wherein

G is O or S; and

R^7 is hydrogen; C_{2-6}alkenyl optionally substituted with Ar^2; C_{3-6}alkynyl; C_{1-6}alkyl optionally substituted with Ar^1, hydroxy, C_{1-6}alkyloxy, carboxyl or C_{1-6}alkyloxycarbonyl;

B is NR^8, CH_2, O, S, SO or SO_2; said R^8 being hydrogen, C_{1-6}alkyl, C_{3-6}cycloalkyl, C_{1-6}alkylcarbonyl, C_{1-6}alkyloxycarbonyl or Ar^2-C_{1-6}alkyl;

R^2 is hydrogen or C_{1-6}alkyl;

n is 0, 1 or 2;

each Alk independently is C_{1-6}alkanediyl;

R^3 is hydrogen or C_{1-6}alkyl;

R^4 is hydrogen, C_{1-6}alkyl optionally substituted with Ar^2, pyridinyl, furanyl, 5-methyl-2-furanyl or C_{1-6}alkyloxy;

R^5 is hydrogen, C_{1-6}alkyl, C_{1-6}alkylaminocarbonyl or Ar^2-aminocarbonyl;

R^6 is hydrogen or C_{1-6}alkyl; or R^5 and R^6 taken together may form a bivalent radical of formula

—CH_2—CH_2—,	(b-1)
—CH_2—CH_2—CH_2—,	(b-2)
—CH=CH—,	(b-3)
—CH=N—,	(b-4)
—N=CH— or	(b-5)
—N=CH—CH_2—,	(b-6)

wherein one or where possible two hydrogen atoms of said radicals (b-1) to (b-6) each independently from one another may be replaced by C_{1-6}alkyl;

Ar^1 is phenyl optionally substituted with 1, 2 or 3 substituents each independently selected from halo, hydroxy, nitro, cyano, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, C_{1-6}alkylthio, mercapto, amino, mono- and di(C_{1-6}alkyl-)amino, carboxyl, C_{1-6}alkyloxycarbonyl and C_{1-6}alkylcarbonyl; thienyl; halothienyl; furanyl optionally substituted with C_{1-6}alkyl and/or hydroxyC_{1-6}alkyl; pyridinyl; pyrimidinyl; pyrazinyl; thiazolyl; or imidazolyl optionally substituted with C_{1-6}alkyl; and

Ar^2 is phenyl optionally substituted with 1, 2 or 3 substituents each independently selected from halo, hydroxy, nitro, cyano, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, C_{1-6}alkylthio, mercapto, amino, mono- and di(C_{1-6}alkyl-)amino, carboxyl, C_{1-6}alkyloxycarbonyl and C_{1-6}alkylcarbonyl.

7. An anti-allergic composition comprising an inert carrier and as active ingredient an antiallergically effective amount of a compound as claimed in claim **1**.

5,008,269
METHOD FOR TREATING CIRCULATORY VESSEL OCCLUSION

Elfriede Leniger-Follert, Sprinkstück 3, D-5800 Hagen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 124,938, Sep. 8, 1987, abandoned. This application Apr. 25, 1989, Ser. No. 342,756
Int. Cl.[5] A01N *43/40*
U.S. Cl. 514—277 **1 Claim**

1. A method for treating a circulatory disturbance and occlusion of vessels in a mammal comprising administering to said mammal the ion-exchange resin Resonium A in an amount sufficient to trap up to 135 mg of potassium per gram of resin.

5,008,270
2-AMINO-7-(HETEROCYCLOMETHYL)-3H,5H-PYRROLO[3,2-D]PYRIMIDIN-4-ONES AND PHARMACEUTICAL USES AND COMPOSITIONS CONTAINING THE SAME

John A. Secrist, III; John A. Montgomery; Steve E. Ealick, all of Birmingham, Ala.; Mark D. Erion, Livingston, and Wayne C. Guida, Fanwood, both of N.J., assignors to BioCryst, Inc., Birmingham, Ala.

Filed Oct. 31, 1989, Ser. No. 429,097
Int. Cl.[5] A61K *31/505*; C07D *487/04*
U.S. Cl. 514—258 **19 Claims**

1. A compound of the formula 2-amino-7-(substituted methyl)-3H,5H-pyrrolo[3,2-d]pyrimidin-4-one wherein substituted methyl is —CH_2—R wherein R is optionally substituted by halogen, hydroxy, alkoxy, alkyl or trifluoromethyl.

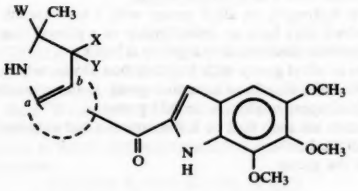
8. A method for the selective suppression of mammalian T-cell function without diminished effect on humoral immunity which comprises administering to a mammal the compound of claim 1, whereby said compound inhibits purine nucleoside phosphorylase and thereby T-cell formation.

5,008,271
DC-88A DERIVATIVES

Yutaka Kanda, Houston, Tex.; Tohru Yasuzawa, Sakai, Japan; Hiromitsu Saito, Sagamihara, Japan; Hiroshi Sano, Machida, Japan; Eiji Kobayashi, and Makoto Morimoto, both of Shizuoka, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

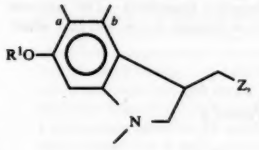
Filed Oct. 18, 1989, Ser. No. 423,788
Claims priority, application Japan, Oct. 21, 1988, 63-265582; Mar. 15, 1989, 64-62572
Int. Cl.[5] A61K *31/44, 31/40*; C07D *471/12, 209/02*
U.S. Cl. 514—292 **15 Claims**

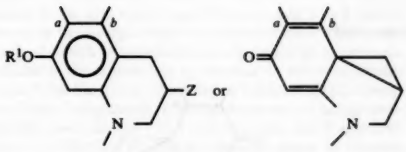
1. A DC88-A derivative represented by the general formula:



wherein one of X and Y is hydrogen, and the other is OR^2 wherein R^2 represents hydrogen, CH_3, —$COCH_3$ or —COPh wherein Ph represents substituted or unsubstituted phenyl, or X and Y are combined together to form =O;

represents





wherein Z represents chlorine or bromine;

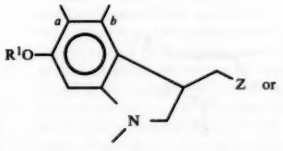
R^1 represents hydrogen, straight or branched alkyl having 1 to 4 carbon atoms, COR^3, $CONR^4R^5$, —CO_2R^6, —$SiR^7R^8R^9$ or —CH_2OCH_3, wherein R^3 represents straight or branched alkyl having 1 to 14 carbon atoms, or unsubstituted or substituted phenyl, each of R^4 and R^5 independently represents straight or branched alkyl having 1 to 4 carbon atoms, R^6 represents straight or branched alkyl having 1 to 4 carbon atoms, allyl or aralkyl each of R^7, R^8, and R^9 independently represents straight or branched alkyl having 1 to 4 carbon atoms;

W represents hydrogen, allyl, —CO_2R^{10}, —COR^4, or CH_2OR^2

wherein

R^{10} represents straight or branched alkyl having 1 to 5 carbon atoms, substituted alkyl having 1 to 5 carbon atoms, allyl or benzyl, R^4 and R^2 have the same significance as defined above; provided that when

represents



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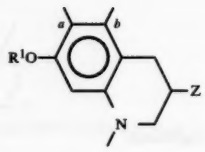
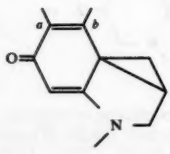


wherein R^1 is hydrogen and W is $—CO_2CH_3$ one of X and Y represents hydrogen, and the other represents $—OR^2$ wherein R^2 has the same significance as defined above; and that when

represents



and W is $—CO_2CH_3$, one of X and Y represents hydrogen, and the other represents $—OR^2$ wherein OR^2 has the same significance as defined above.

5,008,272

LACTAM DERIVATIVES

Ian H. Coates, Hertford; Alexander W. Oxford, and Peter C. North, both of Royston, all of England, assignors to Glaxo Group Limited, England

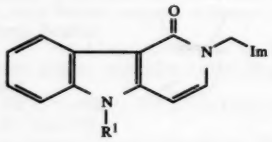
Filed Aug. 14, 1989, Ser. No. 393,145

Claims priority, application United Kingdom, Aug. 15, 1988, 8819382; Sep. 1, 1988, 8820647

Int. Cl.[5] A61K *31/445;* **C07D** *471/04*

U.S. Cl. 514—292 **7 Claims**

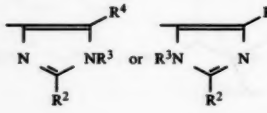
1. A compound of formula (I)



(I)

wherein

Im represents an imidazolyl group of the formula:



and R^1 represents a hydrogen atom or a group selected from C_{1-6}alkyl, C_{3-6}alkenyl, C_{3-10}alkynyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, phenyl, phenylC_{1-3}alkyl, phenylmethoxymethyl, phenoxyethyl, phenoxymethyl, $—CO_2R^5$, $—COR^5$, $—CONR^5R^6$ or $—SO_2R^5$ (wherein R^5 and R^6, which may be the same or different, each represents a hydrogen atom, a C_{1-6}alkyl or C_{3-7}cycloalkyl group, or a phenyl or phenylC_{1-4}alkyl group, in which the phenyl group is unsubstituted or substituted by one or more C_{1-4} alkyl, C_{1-4}alkoxy or hydroxy groups or halogen atoms, with the proviso that R^5 does not represent a hydrogen atom when R^1 represents a group $—CO_2R^5$ or $—SO_2R^5$);

one of the groups represented by R^2, R^3 and R^4 is a hydrogen atom or a C_{1-6}alkyl, C_{3-7}cycloalkyl, C_{3-6}alkenyl, phenyl or phenylC_{1-3}alkyl group, and each of the other two groups, which may be the same or different, represents a hydrogen atom or a C_{1-6}alkyl group;

or a physiologically acceptable salt or solvate thereof.

7. A method of treating a condition mediated through 5-HT_3 receptors which comprises administering to a patient an effective amount to relieve said condition of a compound of formula (I) as defined in claim 1 or a physiologically acceptable salt or solvate thereof.

5,008,273

AMINO ACID DERIVATIVES AND THEIR PHARMACEUTICAL USE

Gerd Schnorrenberg, Gau-Algesheim; Otto Roos, Schwabenheim; Walter Lösel, Gau-Algesheim; Ingrid Wiedemann, Wiesbaden; Wolfram Gaida, Ingelheim/Rhein; Wolfgang Hoefke, Wiesbaden; Dietrich Arndts, Appenheim, and Ilse Streller, Stromberg, all of Fed. Rep. of Germany, assignors to boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

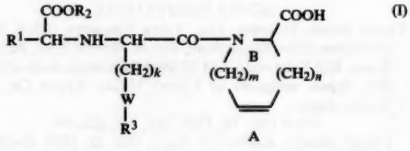
Division of Ser. No. 284,164, Dec. 14, 1988, abandoned, which is a continuation of Ser. No. 127,750, Dec. 2, 1987, abandoned, which is a continuation of Ser. No. 897,444, Aug. 18, 1986, abandoned. This application Sep. 6, 1989, Ser. No. 403,628

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1985, 3529960

Int. Cl.[5] A61K *31/435;* **C07D** *495/04*

U.S. Cl. 514—301 **14 Claims**

1. An amino acid derivative of the formula



(I)

wherein

R^1 is hydrogen or an optionally phenyl-substituted alkyl group with 1 to 6 carbon atoms;

R^2 is hydrogen or an optionally phenyl-substituted alkyl group with 1 to 4 carbon atoms;

R^3 is hydrogen, an alkyl group with 1 to 7 carbon atoms which may have an amino group or a phenyl ring in the terminal position, or the group $R^4—CO—$;

R^4 is an alkyl group with 1 to 5 carbon atoms, which, when W=NH, may have an amino group in the α position;

W is oxygen, sulphur or an NH group;

n and m are each 0, 1, or 2, the sum of n and m being 1 or 2;

k is 1, 2, 3 or 4;

A is the group

which may be linked to the ring B in either way;
or a pharmaceutically acceptable salt thereof.

5,008,274

CARBOSTYRIL DERIVATIVES AND SALTS THEREOF AND PHARMACEUTICAL COMPOSITION FOR INHIBITING ADHESION OF THROMBOCYTES

Takao Nishi; Tetsuyuki Uno; Yasuo Koga, and Gil-Namg Chu, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

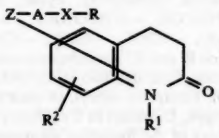
Continuation of Ser. No. 36,564, Mar. 31, 1987, abandoned. This application Aug. 16, 1988, Ser. No. 232,524

Claims priority, application Japan, Apr. 2, 1986, 61-76089; Feb. 25, 1987, 62-43457; Mar. 16, 1987, 62-60770

Int. Cl.[5] A61K *31/47, 31/505;* C07D *401/12, 403/12*

U.S. Cl. 514—312 18 Claims

1. A carbostyril compound or pharmaceutically acceptable salt thereof represented by the formula 1a,



(1a)

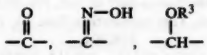
wherein

R is unsubstituted imidazolyl or imidazolyl having 1 to 3 substituents, on the heterocyclic residual ring, selected from phenyl; phenyl having 1 to 3 substituents selected from lower alkyl, halo-lower alkyl, halogen, hydroxy, amino, lower alkylamino, carboxy and lower alkoxy; cycloalkyl; phenylthio; lower alkyl; lower alkyl having 1 to 2 substituents selected from amino, lower alkylamino and carboxyl; amino; hydroxyl; cyano; carboxyl; lower alkoxycarbonyl; phenyl-lower alkyl; phenyl-lower alkyl having hydroxyl substituents on the phenyl ring; phenylsulfonyl; phenylsulfonyl having lower alkyl substituents on the phenyl ring; lower alkoxysubstituted phenyl-lower alkyl; lower alkylthio; lower alkenyl; lower alkoxy and pyridyl;

R^1 is hydrogen, lower alkyl or phenyl-lower alkyl;

R^2 is hydrogen, halogen, lower alkyl-sulfonyloxy, lower alkoxy or hyroxyl;

Z is oxygen, sulfur,



wherein R^3 is hydrogen or lower alkyl, or —NH—;

A is lower alkylene;

X is sulfur, —SO— or —SO_2—; and

the carbon-carbon bond between the 3- and 4-positions in the carbostyril skeleton is a single or double bond.

5,008,275

PESTICIDAL PYRIDYL-SUBSTITUTED ACRYLIC ESTER COMPOUNDS

Alexander Klausener, Krefeld; Gerd Kleefeld, Duesseldorf; Dieter Berg, Wuppertal; Stefan Dutzmann, Duesseldorf, and Gerd Hänbler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

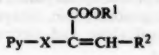
Filed Feb. 8, 1990, Ser. No. 477,271

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1989, 3904931

Int. Cl.[5] C07D *213/74, 401/04;* A01N *43/56, 43/74*

U.S. Cl. 514—334 13 Claims

1. A pyridyl-substituted acrylic ester of the formula



(I)

in which

R^1 represents straight-chain or branched alkyl which has 1 to 6 carbon atoms, or represents aralkyl which has 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and 6 to 10 carbon atoms in the aryl moiety and which is optionally monsubstituted to pollysubstituted in the aryl moiety by identical or different substituents from the group consisting of halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy or alkylthio, each having 1 to 4 carbon atoms, in each case straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, each case straight-chain or branched alkoxycarbonyl or alkoximinoalkyl, each having 1 to 8 carbon atoms in the individual alkyl moieties, cycloalkyl which has 3 to 7 carbon atoms, double-linked alkanediyl which has 3 to 5 carbon atoms, aryl, aralkyl, aryloxy or aralkyloxy, each of which has 6 to 10 carbon atoms in the aryl moiety and if appropriate 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and each of which is optionally monosubstituted to polysubstituted in the aryl moiety by identical or different substituents from the group consisting of halogen, alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each having 1 to 4 carbon atoms and if appropriate 1 to 9 identical or different halogen atoms, or heteroarylalkyl or heteroaryl, each of which has 2 to 9 carbon atoms and 1 to 4 identical or different hereto atoms in the heteroaryl moiety and if appropriate 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and each of which is optionally monosubstituted to polysubstituted in the heteroaryl moiety by identical or different substituents from the group consisting of halogen, alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each having 1 to 4 carbon atoms and if appropriate 1 to 9 identical or different halogen atoms;

R^2 represents dialkylamino which has 1 to 6 carbon atoms in each of the individual alkyl moieties, or represents a radical —Z—R^3,

X represents oxygen or sulphur or represents a radical

Py represents 2-pyridyl, 3-pyridyl or 4-pyridyl, each of which is monosubstituted to polysubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy or alkylthio, each having 1 to 6 carbon atoms, in each case straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, in each case straight-chain or branched alkoxycarbonyl, alkoximinoalkyl, dialkylamino or dialkylaminocarbonyl, each having 1 to 4 carbon atoms in the individual alkyl moieties, in each case straight-chain or branched alkenyl or alkinyl, each having 2 to 8 carbon atoms, or aryl, aryloxy, arylthio, arylcarbonyl, aralkyl, aralkenyl, aralkinyl, aralkyloxy or heteroaryl, each of which has 6 to 10 carbon atoms in the aryl moiety and if appropriate 1 to 6 carbon atoms in the straight-chain or branched alkyl moiety or if appropriate 2 to 6 carbon atoms in the straight-chain or branched alkenyl moiety or alkinyl moiety or 2 to 9 carbon atoms and 1 to 4 identical or different hereto atoms in the heteroaryl moiety and each of which is optionally monosubstituted to polysubstituted in the respective aryl moiety or in the heteroaryl

moiety by identical or different substituents from the group consisting of halogen, alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy, halogenoalkylthio, dioxyalkylene, halogensubstituted dioxyalkylene and optionally substituted phenyl; where

R^3 represents straight-chain or branched alkyl which has 1 to 6 carbon atoms or represents aralkyl which as 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and 6 to 10 carbon atoms in the aryl moiety and which is optionally monosubstituted to pollysubstituted in the aryl moiety by identical or different substituents as set forth as possible aryl substituents in the case of R^1,

R^4 represents hydrogen, or represents straight-chain or branched alkyl which has 1 to 6 carbon atoms, or represents straight-chain or branched alkanoyl which has 1 to 6 carbon atoms in the alkyl moiety, or represents aralkyl or aryl which has 1 to 6 carbon atoms in the straight-chain or branched alkyl moiety and 6 to 10 carbon atoms in the respective aryl moiety and each of which is optionally monosubstituted to polysubstituted in the respective aryl moiety by identical or different substituents as set forth as possible aryl substituents in the case of R^1, and

Z represents oxygen or sulphur.

12. A method of combating fungi which comprises applying to such fungi or to a fungus habitat a fungicidally effective amount of a compound according to claim **1**.

5,008,276
METHYL α-(2-SUBSTITUTED)PYRID-3-YL-β-METHOXYACRYLATES, COMPOSITIONS CONTAINING THEM AND THEIR USE AS FUNGICIDES

John M. Clough, Buckinghamshire; Christopher R. A. Godfrey; Stephen P. Heaney, both of Berkshire, and Kenneth Anderton, Lancashire, all of England, assignors to Imperial Chemical Industries PLC, London, England

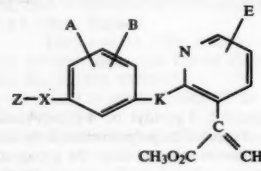
Continuation-in-part of Ser. No. 39,401, Apr. 17, 1987, Pat. No. 4,826,531. This application Oct. 17, 1988, Ser. No. 258,742

Claims priority, application United Kingdom, Oct. 15, 1987, 8724252

Int. Cl.[5] **A01K** *43/40;* **A61K** *31/50, 31/565, 31/44, 31/47, 31/495;* **C07D** *215/16, 215/20, 215/36, 211/72, 211/84, 213/63*

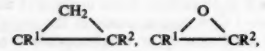
U.S. Cl. 514—335 **5 Claims**

1. A fungicidal compound of the formula (I):



(I)

or a stereoisomer thereof, wherein A, B and E, which are the same or different, are H, halo, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, C_{1-4} alkylcarbonyl, C_{1-4} alkoxycarbonyl, phenoxy, nitro or cyano; K is oxygen or sulphur; X is O; $S(O)_n$, NR^4, CR^1R^2, CHR^5, CO, $CR^1(OR^2)$, $C{=}CR^1R^2$, CHR^1CHR^2, $CR^1{=}R^2$, $CHR^1CR^2{=}CH$, C=C, $OCHR^1$, CHR^1O, $OCHR^1O$, $S(O)_nCHR^1$, $S(O)_nCHR^1O$, $CHR^1S(O)_n$, CHR^1OSO_2, NR^4CHR^1, CHR^1NR^4, CO_2, O_2C, SO_2O, OSO_2, CO.CO, $COCHR^1$, $COCHR^1O$, CHR^1CO, $CHOH.CHR^1$, $CHR^1.CHOH$,



$CONR^4$, $OCONR^4$, NR^4CO, $CSNR^4$, $OCS.NR^4$, $SCO.NR^4$, NR^4CO_2, NR^4CS, NR^4CSO, NR^4COS, NR^4CONR^4, $S(O)_nNR^4$, $NR^4S(O)_n$, CS_2, S_2C, CO.S, SCO, N=N, $N{=}CR^1$, $CR^1{=}N$, $CHR^1CHR^2CH(OH)$, CHR^1OCO, CHR^1SCO, CHR^1NR^4CO, $CHR^1NR^4COR^4$, CHR^1CHR^2CO, $O.N{=}CR^1$, $CHR^1O.N{=}CR^2$, $COOCR^1R^2$, $CHR^1CHR^2CHR^3$, $OCHR^1CHR^2$, $(CH_2)_nO$, CHR^1OCHR^2, CHR^1CHR^2O, $OCHR^1CHR^2O$; $S(O)_nCHR^1CHR^2$, $CHR^1S(O)_nCHR^2$, $CHR^1CHR^2S(O)_n$, $CR^1{=}NMR^4$, $NR^4N{=}CR^1$, CHR^1CONR^2, $CHR^1OCO.NR^2$, $CH{=}CHCH_2O$, $COCHR^1CHR^2O$, or $(R^5)_2P{+}CHR^2Q^-$; R^1, R^2 and R^3, which are the same or different, are H, C_{1-4} alkyl or phenyl; R^4 is M, C_{1-4} alkyl or COR^1, R^5 is phenyl; Q^- is a halide anion; n is 0, 1 or 2; m is 3, 4 or 5; and Z is aryl or heteroaryl, or aryl or heteroaryl substituted with one or more of halo, hydroxy, mercapto, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{2-4} alkenyloxy, C_{2-4} alkynyloxy, halo(C_{1-4})alkyl, halo(C_{1-4})alkoxy, C_{1-4} alkylthio, hydroxy(C_{1-4})alkyl, C_{1-4}alkoxy(C_{1-4})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, aryl, heteroaryl, aryloxy, heteroaryloxy, aryl(C_{1-4})alkyl, aryl(C_{1-4})alkyl in which the alkyl moiety is substituted with hydroxy, heteroaryl(C_{1-4})alkyl, aryl(C_{2-4})alkenyl, heteroaryl(C_{2-4})alkenyl, aryl(C_{1-4})alkoxy, heteroaryl(C_{1-4})alkoxy, aryloxy(C_{1-4})alkyl, heteroaryloxy(C_{1-4})alkyl, carbacyloxy, cyano, thiocyanato, nitro, —NR′R″, —NHCOR′, —NHCONR′R″, —CONR′R″, —COOR′, $-OSO_2R'$, $-SO_2R'$, —COR′, —CR=NR″ or —N=CR′R″ in which R′ and R″ are independently hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, phenyl or benzyl, or phenyl or benzyl substituted with halogen, C_{1-4} alkyl or C_{1-4} alkoxy; the aryl or heteroaryl rings of any of the foregoing substituents and the phenyl ring of R^5 being unsubstituted or substituted with one or more of halo, hydroxy, mercapto, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{2-4} alkenyloxy, C_{2-4} alkynyloxy, halo(C_{1-4})alkyl, halo(C_{1-4})alkoxy, C_{1-4} alkylthio, hydroxy(C_{1-4})alkyl, C_{1-4} alkoxy(C_{1-4})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, alkanoyloxy, benzoyloxy, cyano, thiocyanato, nitro, —NR′R″, —NHCOR′, —NHCONR′R″, —CONR′R″, —COOR′, $-OSO_2R'$, $-SO_2R'$, —COR′, —CR′=NR″ or —N=CR′R″ in which R′ and R″ have the meanings given above.

5. A method of combating fungi which comprises applying to plants, to the seeds of plants or to the locus of the plants or seeds, a compound according to claim **1**.

5,008,277
N-[(ALPHA-PERHALOALKYLBENZYLOXY)PYRIDYL]-N′-BENZOYLUREA INSECTICIDES

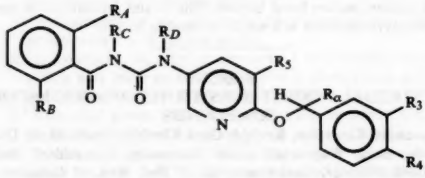
Ernest L. Plummer, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 136,045, Dec. 21, 1989, Pat. No. 4,870,089, which is a continuation-in-part of Ser. No. 801,365, Nov. 25, 1985, abandoned. This application Jun. 30, 1989, Ser. No. 374,902

Int. Cl.[5] **C07D** *213/75, 405/12;* **A01N** *43/40*

U.S. Cl. 514—337 **23 Claims**

1. An insecticidal benzoylurea compound of the formula



wherein

R_A is selected from the group consisting of -hydrogen, -halogen, -lower alkyl, -lower alkoxy, -benzyl, and -benzyloxy;

R_B is selected from -hydrogen and -halogen;

R_C and R_D together constitute a —COCO— bridge;

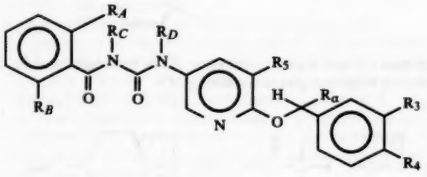
Rα is a lower perhaloalkyl substituent;

R_3 is selected from the group consisting of -hydrogen, -halo-

gen and -phenylthio, and R_4 is selected from the group consisting of -hydrogen, -halogen, -lower alkyl, -lower alkoxy, -lower alkoxyalkyl, -lower haloalkoxy, -lower alkylthio, -lower alkylsulfonyl, and -diallylamino; or R_3 and R_4 together constitute a —OCH_2O—, —$CH_2C(CH_3)_2O$—, or —CF_2CF_2O— bridge; and

R_5 is —hydrogen or —lower alkyl.

10. A method for controlling insects which comprises applying to plants upon which insects feed and whose control is desired an insecticidally effective amount of a compound of the formula



wherein

R_A is selected from the group consisting of -hydrogen, -halogen, -lower alkyl, -lower alkoxy, -benzyl, and -benzyloxy;

R_B is selected from -hydrogen and -halogen;

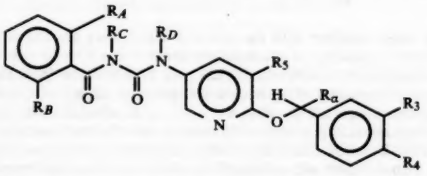
R_C and R_D together constitute a -COCO- bridge;

Rα is a lower perhaloalkyl substituent;

R_3 is selected from the group consisting of -hydrogen, -halogen and -phenylthio, and R_4 is selected from the group consisting of -hydrogen, -halogen, -lower alkyl, -lower alkoxy, -lower alkoxyalkyl, -lower haloalkoxy, -lower alkylthio, -lower alkylsulfonyl, and -diallylamino; or R_3 and R_4 together constitute a —OCH_2O—, —$CH_2C(CH_3)_2O$—, or —CF_2CF_2O— bridge; and

R_5 is -hydrogen or -lower alkyl.

13. An insecticidal benzoylurea compound of the formula



wherein

R_A is selected from the group consisting of -hydrogen, -halogen, -lower alkyl, -lower alkoxy, -benzyl, and -benzyloxy;

R_B is selected from -hydrogen and -halogen;

R_C and R_D are both -hydrogen;

Rα is a lower perhaloalkyl substituent;

R_3 and R_4 together constitute a —OCH_2O—, —$CH_2C(CH_3)_2O$—, or —CF_2CF_2O— bridge; and

R_5 is -hydrogen or -lower alkyl.

5,008,278

THERAPEUTICALLY ACTIVE COMPOUND AND A PROCESS FOR ITS PREPARATION

Arne E. Brandstrom, Göteborg; Per L. Lindberg, Askim, and Gunnel E. Sunden, Göteborg, all of Sweden, assignors to Aktiebolaget Hassle, Molndal, Sweden

Filed Dec. 20, 1989, Ser. No. 454,047

Claims priority, application Sweden, Dec. 22, 1988, 8804629-7

Int. Cl.[5] **A61K** *31/445;* **C07D** *213/06*

U.S. Cl. 514—338 **7 Claims**

1. 5-Fluoro-2[[(4-cyclopropylmethoxy-2-pyridinyl)methyl]-sulfinyl]-1H-benzimidazole or physiologically acceptable salts thereof, or its optical enantiomers.

5. A method for inhibiting gastric acid secretion by administering to mammals an amount of a compound as defined in claim **1** sufficient to inhibit gastric acid secretion.

5,008,279

CIRCULATION-ACTIVE FLUOROMETHOXYPHENYL DIHYDROPYRIDINE COMPOUNDS

Gerhard Franckowiak, Wuppertal; Jürgen Stoltefuss, Haan; Martin Bechem; Rainer Gross, both of Wuppertal; Michael Kayser, Leverkusen; Siegbert Hebisch, Oberhausen, and Matthias Schramm, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

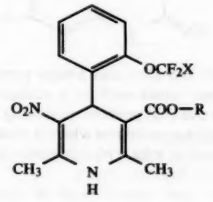
Filed Oct. 27, 1988, Ser. No. 263,671

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1987, 3737340

Int. Cl.[5] **C07D** *211/90, 401/12;* **A61K** *31/44*

U.S. Cl. 514—354 **15 Claims**

1. A fluoromethoxyphenyldihydropyridine of the formula



in which

X stands for hydrogen or fluorine and

R stands for straight-chain or branched alkyl or alkenyl having 2 to 12 carbon atoms which can be interrupted by 1 to 2 oxygen and/or sulphur atoms in the chain or for cyclic alkyl or alkenyl having up to 12 carbon atoms, which alkyl, alkenyl, cyclic alkyl or cyclic alkenyl radical can be monosubstituted or polysubstituted

(a) by hydroxyl, aryl having 6 to 12 carbon atoms, aryloxy having 6 to 12 carbon atoms, where the aryl radical is again substituted by alkyl having up to 4 carbon atoms, alkoxy having up to 4 carbon atoms or halogen, the substituents being identical or different, or

(b) by carboxyl, alkoxycarbonyl having up to 6 carbon atoms, pyridyl, piperidyl, pyrimidyl, acyloxy having up to 7 carbon atoms, sulphamoyl, carbamoyl, halogen or cyano, the substituents being identical or different, or

(c) by an amino group, where the amino group can carry one or two identical or different substituents from the group consisting of alkyl having up to 6 carbon atoms, benzyl, phenyl or acyl having up to 7 carbon atoms,

or a salt thereof.

10. A circulation-active composition comprising a circulation-active effective amount of a compound or salt according to claim **1** and a diluent.

5,008,280

2-IMINOBENZOTHIAZOLINE DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Claude Gueremy, Houilles; Patrick Jimonet, Villepreux, and Serge Mignani, Livry Gargan, all of France, assignors to Rhone-Poulenc Sante, Antony, France

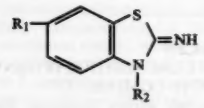
Filed Dec. 13, 1989, Ser. No. 450,231

Claims priority, application France, Dec. 15, 1988, 88 16546; Jul. 13, 1989, 89 09480

Int. Cl.[5] **C07D** *277/82;* **A61K** *31/425*

U.S. Cl. 514—367 **6 Claims**

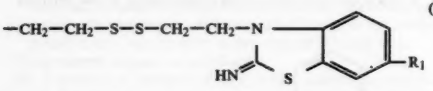
1. A compound comprising the formula



wherein R_1 represents a polyfluoroalkoxy or polyfluoroalkyl, and R_2 represents

either a residue of formula $—CH_2—(CH(R_4))_n—R_3$, wherein R_3 represents dialkylamino, piperidino, 1-pyrrolidinyl, mercapto, acylthio, alkylthio, alkylsulphinyl or alkylsulphonyl, R_4 represents hydrogen or alkyl, and n is 0 or 1,

or a residue of formula



(A)

the aforesaid alkyl radicals and alkyl and alkoxy portions containing 1 to 4 carbon atoms each in a straight or branched chain, and the said acyl portions containing 2 to 4 carbon atoms each, and its enantiomers where it contains an asymmetric centre, and its salts with inorganic or organic acids.

5,008,281

NOVEL PYRETHRINOIDS

Jacques Demassey, Montevrain; Jean-Pierre Demoute, Montreuil-Sous-Bois, and Jean Tessier, Vincennes, all of France, assignors to Roussel Uclaf, Paris, France

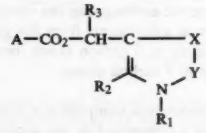
Division of Ser. No. 221,948, Jul. 20, 1988, Pat. No. 4,925,862. This application Nov. 7, 1989, Ser. No. 432,529

Claims priority, application France, Jul. 20, 1987, 87 10202

Int. Cl.[5] A01N *43/76, 53/00;* **C07D** *263/14, 263/24*

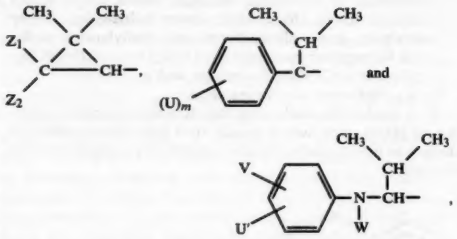
U.S. Cl. 514—376 **54 Claims**

1. All stereoisomeric forms and mixtures thereof of a compound of the formula



I

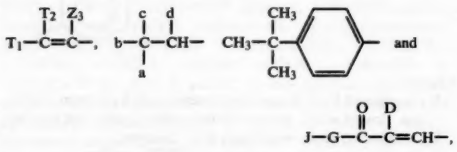
wherein X is —O—, Y is —C═O, —C═S or $—CH_2—$, R_1 is selected from the group consisting of hydrogen, halogen, saturated or unsaturated alkyl of 1 to 8 carbon atoms and saturated or unsaturated cycloalkyl of 3 to 8 carbon atoms, the latter two being unsubstituted or substituted with at least one halogen and carbocyclic aryl of 6 to 14 carbon atoms, R_2 is selected from the group consisting of hydrogen, $—CF_3$, $—NO_2$, —CN, halogen, alkoxy of 1 to 8 carbon atoms, aryl of 6 to 14 carbon atoms, an ester, saturated or unsaturated alkyl of 1 to 8 carbon atoms and saturated or unsaturated cycloalkyl of 3 to 8 carbon atoms, the latter two being unsubstituted or substituted with at least one halogen, R_3 is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, —CN and —CN═CH and A is selected from the group consisting of



(I)

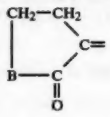
and

wherein Z_1 and Z_2 are methyl or Z_1 is hydrogen and Z_2 is selected from the group consisting of



and

Z_3 is hydrogen or halogen, T_1 and T_2 are individually selected from the group consisting of hydrogen, halogen, $—CF_3$, —CN, phenyl optionally substituted with a halogen and alkyl and alkoxy of 1 to 8 carbon atoms or taken together form



or taken together with the cabon to which they are attached form a cycloalkyl of 3 to 6 carbon atoms, B is —O— or —S—, a,b,c, and d are individually halogen, D is selected from the group consisting of hydrogen, halogen and alkoxy of 1 to 8 carbon atoms, G is —O— or —S—, J is selected from the group consisting of optionally unsaturated alkyl and haloalkyl of 1 to 8 carbon atoms, optionally unsaturated cycloalky of 3 to 8 carbon atoms and carboxyclic aryl of 6 to 14 carbon atoms, all optionally substituted with at least one functional group, U is selected from the group consisting of halogen and alkyl and alkoxy of 1 to 8 carbon atoms optionally substituted with at least one halogen, m is 0,1 or 1 and if 2 the Us may be different, U' and V are individually selected from the group consisting of hydrogen, halogen and $—CF_3$ and W is hydrogen or $—CH_3$.

5,008,282

CYCLIC GUANIDINE DERIVATIVES, ANTI-ULCERATIVES AND METHODS OF MANUFACTURING THE SAME

Tsuyoshi Tomiyama; Akira Tomiyama; Tadashi Shirai, all of Sakaki; Shuuichi Wakabayashi, Koushoku; Tomoyuki Kawai, Nagano; Naoto Ueyama, Ueda, and Motoharu Sonegawa, Nagano, all of Japan, assignors to Kotobuki Seiyaku Co. Ltd., Nagano, Japan

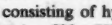
Filed Dec. 13, 1989, Ser. No. 450,264

Claims priority, application Japan, Dec. 28, 1988, 63-332550

Int. Cl.[5] C07D *235/30, 235/04;* **A61K** *31/415*

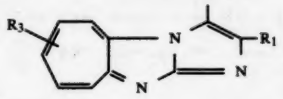
U.S. Cl. 514—393 **9 Claims**

1. A compound of the formula:



wherein:

A is



wherein:

R_1 represents a lower alkyl or phenyl group, said phenyl group being optionally substituted by a lower alkyl, alkoxy or halogeno group;

R_3 is a hydrogen atom or a lower alkyl group, and

R represents a lower alkyl, alkenyl, alkynyl, alkanoyl, alkenoyl, dialkylaminoalkyl, cyanoalkyl, alkoxycarbonylalkyl, carboxy alkenyl, alkoxycarbonyl, alkoxyalkylcarbonyl, dialkylamino carbonyl, dialkylaminothiocarbonyl, phenoxyallkylcarbonyl, piperidinoalkyl, pyridine carbonyl, substituted or unsubstituted benzoyl, or substituted or unsubstituted benzyl group and pharmaceutically acceptable acid addition salts thereof.

3. An anti-gastric ulcerative agent comprising a pharmaceutically acceptable carrier and as an active ingredient a compound defined in claim 1.

5,008,283

USE OF TENIDAP TO INHIBIT ACTIVATION OF COLLAGENASE AND TO INHIBIT THE ACTIVITY OF MYELOPEROXIDASE

Warren D. Blackburn, Jr., and Leland D. Loose, both of Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Mar. 19, 1990, Ser. No. 495,868

Int. Cl.[5] A01N *43/38*

U.S. Cl. 514—414 **21 Claims**

1. A method of inhibiting activation of collagenase in a mammal in need thereof which comprises administering to said mammal a collagenase activation inhibiting amount of tenidap or a pharmaceutically-acceptable base salt thereof.

5,008,284

METHOD OF REDUCING PRE- AND POST-ISCHEMIC MYOCARDIAL ARRHYTHMIAS AND FIBRILLATION

Gary J. Grover, Stockton, N.J., and James L. Bergey, Lansdale, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 311,321, Feb. 15, 1989, Pat. No. 4,931,464. This application Dec. 18, 1989, Ser. No. 452,037

Int. Cl.[5] A61K *31/675*

U.S. Cl. 514—423 **4 Claims**

1. A method of reducing pre- and post-ischemic arrhythmias and fibrillation as well as reducing arrhythmias associated with congestive heart failure in a mammalian species which comprises administering to a mammalian species in need of such treatment an effective amount of fosinopril or a pharmaceutically acceptable salt of fosinopril alone or in combination with a thrombolytic agent or antifibillatory agent or with a non-pharmaceutical reperfusion technique.

5,008,285

(6,11-DIHYDRO-11-OXODIBENZ[b,e]OXEPIN-YL)PENTANOIC ACIDS AND DERIVATIVES THEREOF

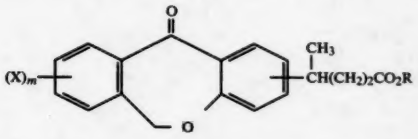
Lawrence L. Martin, Lebanon, and Linda L. Setescak, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 252,328, Oct. 3, 1988, abandoned, which is a continuation of Ser. No. 945,626, Dec. 23, 1986, abandoned, which is a continuation of Ser. No. 604,672, Apr. 27, 1984, abandoned. This application Nov. 1, 1989, Ser. No. 430,045

Int. Cl.[5] A61K *31/335*; C07D *313/12*

U.S. Cl. 514—450 **2 Claims**

1. A method of suppressing arthritic inflammation with low gastric irritability in mammals which comprises orally administering to a mammal in need of arthritic type inflammation suppression with low gastric irritability an effective amount of a compound of the formula



wherein R is hydrogen or loweralkyl of 1 to 5 carbon atoms; X is hydrogen, loweralkyl of 1 to 5 carbon atoms, loweralkoxy of 1 to 5 carbon atoms, halogen or trifluoromethyl, and m is 1 or 2, the optical antipode thereof; or a pharmaceutically acceptable salt thereof.

5,008,286

CERTAIN SUBSTITUTED NAPHTHOFURANS WITH ANTI-TUMOR PROPERTIES

Kenneth W. Bair, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 132,724, Dec. 11, 1987, Pat. No. 4,866,070, Continuation of Ser. No. 801,085, Nov. 22, 1985, abandoned, Continuation-in-part of Ser. No. 673,355, Nov. 20, 1984, abandoned. This application Aug. 28, 1989, Ser. No. 401,612

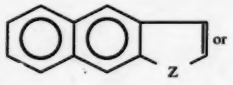
Int. Cl.[5] A61K *31/34*; C07D *307/92*

U.S. Cl. 514—468 **11 Claims**

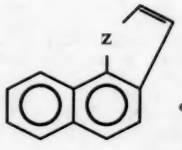
1. A compound of the formula (I):

$$ArCH_2R^1 \quad (I)$$

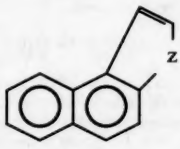
or a monomethyl or monoethyl ether thereof, an ester thereof derived from a C_{1-6} alkanoic acid or a pharmaceutically acceptable acid addition salt thereof wherein Ar is



or

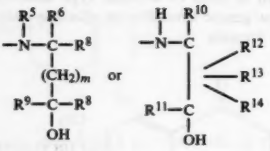


or



wherein Z is 0

wherein R^1 contains not more than eight carbon atoms and is a group:



wherein m is 0 or 1;

R^5 is hydrogen;

R^6 and R^7 are the same or different and each is hydrogen or C_{1-5} alkyl, or C_{1-5} alkyl substituted by hydroxy;

R^8 and R^9 are the same or different and each is hydrogen or C_{1-3} alkyl;

—C—C— is a five- or six-membered saturated carbocyclic ring;

R^{10} is hydrogen, methyl or hydroxymethyl;

R^{11}, R^{12} and R^{13} are the same or different and each is hydrogen or methyl; and R^{14} is hydrogen, methyl, hydroxy or hydroxymethyl.

5,008,287

PHARMACEUTICAL COMPOSITIONS HAVING ANTINEOPLASTIC ACTIVITY

Sergio Monti, Lugano, Switzerland, assignor to Onco-Pharm Development AG, Vaduz/Lichtenstein, Fed. Rep. of Germany

Filed Mar. 3, 1989, Ser. No. 318,905

Claims priority, application Switzerland, Mar. 7, 1988, 842/88

Int. Cl.[5] A61K *31/28, 31/095*

U.S. Cl. 514—492 **6 Claims**

1. A method for treating a neoplasm sensitive to treatment with a selenium compound in a human consisting of administering to said humans in need thereof an effective amount of a diselenide of formula I

R—Se—Se—R′ (I)

wherein R and R′ which can be the same or different represent a linear or branched chain C_1–C_{20}-alkyl or C_2–C_{20}-alkenyl group and a pharmaceutically acceptable vegetal oil carrier.

5,008,288

CARNITINE DIRECTED PHARMACEUTICAL AGENTS

Alfred Stracher, 47 The Oaks, Roslyn Estates, N.Y. 11576, and Leo Kesner, 1726 E. 32nd St., Brooklyn, N.Y. 11234

Division of Ser. No. 3,888, Jan. 15, 1987, Pat. No. 4,866,040, which is a continuation-in-part of Ser. No. 816,546, Jan. 6, 1986, Pat. No. 4,742,081. This application May 4, 1989, Ser. No. 347,361

The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.

Int. Cl.[5] A61K *31/24, 31/44, 37/02;* **C07K** *17/02*

U.S. Cl. 514—535 **11 Claims**

1. A compound comprising a carrier selected from the group consisting of carnitine and cysteic acid covalently bonded through an alcohol, carboxyl or amine group to a pharmaceutically active compound selected from the group consisting of pepstatin, procainamide, quinidine, propranolol and leucyl argininal.

6. A compound according to claim **1**, wherein the pharmaceutically active compound is procainamide.

5,008,289

COMPOSITION FOR TREATING NASAL DISORDERS AND HEADACHES

Joel E. Bernstein, Deerfield, Ill., assignor to GalenPharma, Inc., Deerfield, Ill.

Filed Dec. 2, 1988, Ser. No. 279,586

Int. Cl.[5] A61K *31/24, 31/16*

U.S. Cl. 514—535 **7 Claims**

1. A composition for treating the symptoms of nasal disorders and headaches, said composition comprising:

a solution or suspension formulated from a pharmaceutically acceptable carrier for instillation into the nose, said solution or suspension containing capsaicin in concentrations from about 0.001% to about 1% weight

and including a pharmaceutically acceptable local anesthetic selected from the group consisting of lidocaine or benzocaine in concentrations from about 0.5% to about 20% by weight.

5,008,290

SULPHONAMIDOETHYL COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS COMPRISING THESE COMPOUNDS

Armin Heckel; Josef Nickl; Erich Muller; Berthold Narr; Johannes Weisenberger; Wolfgang Eisert, and Thomas Muller, all of Biberach, Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

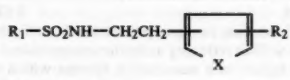
Division of Ser. No. 92,742, Sep. 3, 1987, Pat. No. 4,870,076. This application Mar. 3, 1989, Ser. No. 319,397

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1986, 3629929

Int. Cl.[5] A61K *31/34;* **C07D** *307/54*

U.S. Cl. 514—544 **6 Claims**

1. Sulphonamidoethyl compounds of formula



(I)

wherein

R_1 is phenyl optionally mono-, di- or trisubstituted by halo, methyl or methoxy, where the substituents may be the same or different, or benzyl, nitrophenyl, acetamidophenyl or thienyl,

R_2 is hydroxycarbonyl or alkoxycarbonyl with a total of 2 to 4 carbon atoms bonded via straight chained or branched C_1–C_5 alkylene or via C_2–C_5 alkenylene, whilst any methylene group in the above-mentioned alkylene or alkenylene groups, which must be liked to the heterocyclic group, may be replaced by hydroxymethylene or carbonyl, and

X is oxygen,

the enantiomers and salts thereof with inorganic or organic bases, if R_2 comprises hydroxycarbonyl.

5. A method for treatment of thromboembolic disorders in a warm-blooded animal which comprises administering to said animal a therapeutically acceptable amount of a compound as recited in claim **1**.

5,008,291

METHOD AND COMPOSITION FOR ACHIEVING CHEMOTHERAPEUTIC ACTIVITY

John P. Minton; Thomas E. Webb, and Hussein M. Abou-Issa, all of Columbus, Ohio, assignors to Ohio State University Research Foundation, Columbus, Ohio

Continuation-in-part of Ser. No. 89,568, Aug. 26, 1987, abandoned. This application Nov. 13, 1989, Ser. No. 436,046
The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.
Int. Cl.[5] A61K *31/185*
U.S. Cl. 514—578 7 Claims

1. A dietary supplement for use as a chemotherapeutic agent in treating mammary cancer in humans or animals via steady and prolonged inhibition of beta-glucuronidase and via elevation of the level of cellular cAMP (cyclic AMP) and of histone kinases, the supplement consisting essentially of approximately 0.01 to 0.02 parts by weight of calcium glucarate for inhibiting beta-glucuronidase and approximately 0.0003 to 0.0006 parts by weight of N-(4-hydroxyphenyl) retinamide for elevating levels of cellular cAMP and of histone kinases.

4. A method of treating mammary cancer in humans or animals comprising administering an amount, which is safe and sufficient of the dietary supplement of claim 1 including the glucarolactone-based compound and the retinoid-based compound, or a pharmaceutically acceptable salt thereof to a patient having at least one mammary tumor.

5,008,292

PESTICIDAL METHOD

Zoltán Ecsery; József Knoll; Eva Somfai; Zoltán Török; Éva Szinnyei, and Károly Mozsolits, all of Budapest, Hungary, assignors to Chinoin Gyogyszer Es Vegyeszeti Termekek Gyara R. T., Budapest, Hungary

Continuation of Ser. No. 739,185, May 30, 1985, abandoned. This application Nov. 25, 1987, Ser. No. 129,342
Claims priority, application Hungary, May 31, 1984, 2124/84
Int. Cl.[5] A01N *33/04*; C07C *211/03*
U.S. Cl. 514—654 3 Claims

1. A method of combatting insects which comprises applying onto plants to be protected or onto the insects or the environment thereof an effective amount of a pesticidal composition which comprises a compound selected from the group consisting of N-{2-(4-fluorophenyl)-1-methyl}-ethyl-N-methyl-N-propynyl amine, its optical isomers, and its acid addition salts, as an active ingredient.

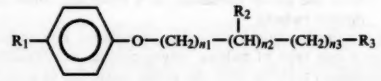
5,008,293

PROCESS FOR THE TREATMENT OF THE SKIN TO ALLEVIATE SKIN DISEASES ARISING FROM CONTACT SENSITIZATION OR IRRITATION UTILIZING P-SUBSTITUTED PHENOXY ALKANOLS

Frank M. Berger, 515 E. 72nd St., Ste. 30E, New York, N.Y. 10021

Filed Jul. 22, 1988, Ser. No. 223,146
Int. Cl.[5] A61K *31/075*
U.S. Cl. 514—718 8 Claims

1. A process for alleviating contact sensitization or irritation which arises when an agent giving rise to contact hypersensitivity is administered topically to the skin of the animal, which comprises administering with the said agent an amount therapeutically effective to inhibit such contact hypersensitivity or specific irritation of a substituted phenoxy alkanol having the formula:



in which:

R_1 substituted in ortho, meta or para position or combination of these is selected from hydrogen, halogen, alkyl having from one to six carbon atoms, preferably p-chlorine or p-tertiary-butyl; and bivalent cycloalkylene condensed with the phenyl group at adjacent ring carbons thereof, such as in indane;

R_2 and R_3 are hydrogen or hydroxyl and at least one of R_2 and R_3 is hydroxyl; and

n_1, n_2 and n_3 represent the number of CH_2, CHR_2 and CH_2 groups, respectively, and are numbers within the range from 1 to 10.

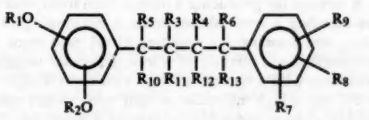
5,008,294

METHODS OF TREATING TUMORS WITH COMPOSITIONS OF CATECHOLIC BUTANES

Edward S. Neiss, Denver, and Larry M. Allen, Golden, both of Colo., assignors to Chemex Pharmaceuticals, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 52,120, May 4, 1987, abandoned, which is a continuation of Ser. No. 699,923, Feb. 11, 1985, abandoned, which is a continuation-in-part of Ser. No. 578,501, Apr. 9, 1984, abandoned, which is a continuation-in-part of Ser. No. 465,631, Feb. 10, 1983, abandoned, which is a continuation-in-part of Ser. No. 365,781, Apr. 5, 1982, abandoned, which is a continuation-in-part of Ser. No. 49,886, Jun. 19, 1979, abandoned. This application Jun. 3, 1987, Ser. No. 57,481
Int. Cl.[5] A61K *31/05*
U.S. Cl. 514—731 34 Claims

1. A method for inhibiting the growth of a tumor which comprises topically administering to the situs of the tumor of a mammal in need of said treatment an effective amount of a composition comprising at least 1 catecholic butane of the formula:



wherein R_1 and R_2 are independently H, lower alkyl, lower acyl, or alkylene;

R_3, and R_4, R_5, R_6, R_{10}, R_{11}, R_{12} and R_{13} are independently H or lower alkyl;

R_7, R_8 and R_9 are independently H, hydroxy, lower alkoxy, lower acyloxy, or any two adjacent groups together may be alkylene dioxy.

5,008,295

METHOD INHIBITING THE GROWTH OF CANCER CELLS

Hoyoku Nishino, Hirakata; Ryozo Iwasaki, Tokyo; Akio Okabe, Tokyo, and Yuki Yogo, Tokyo, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Jul. 28, 1988, Ser. No. 225,020
Claims priority, application Japan, Jul. 30, 1987, 62-191301
Int. Cl.[5] A61K *31/015*
U.S. Cl. 514—766 9 Claims

1. A method of inhibiting the growth of cancer cells which are susceptible to treatment with α-carotene, said method consisting essentially of:

administerting an effective cancer cell growth inhibiting amount of α-carotene to a mammal having said cancer cells.

5,008,296

BREATHABLE MICROPOROUS FILM

Mitchell K. Antoon, Jr., and David J. Hill, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 224,632, Jul. 27, 1988, Pat. No. 4,293,650. This application Mar. 29, 1990, Ser. No. 500,975

Int. Cl.[5] C08J 9/32, 9/36; B29C 55/12

U.S. Cl. 521—91 7 Claims

1. A breathable film composition comprising:

20 to 37% by weight of a polymer or copolymer of an α-olefin having 2–8 carbons or mixtures thereof,

60 to 75% by weight of calcium carbonate or glass beads having particle sizes of 10 to 25 micrometers,

0.1 to 3.0% by weight of calcium stearate, and

optionally, 0 to 2% by weight of a UV light, oxygen, and heat stabilizer,

wherein the moisture level in the blended composition is maintained below 700 ppm prior to forming a casting and then, based on the polymer or copolymer used, stretching the casting to produce oriented film in 2 directions from about 1.5 to 7 times in each direction in a temperature range of from about 20° to about 160° C. and each oriented film having a Gurley porosity (method B, ASTM D-726) of 0.1 second to 85 seconds so that the film has good air and water vapor transmission rates but is substantially impenetrable by liquid water.

5,008,297

METHOD FOR PRODUCING PHENOL RESIN FOAMS AND METHOD OF MAKING FOAMED LAMINATES

Akihiro Maruyama; Munehiko Kato; Takumi Ishiwaka; Katsuto Seki, and Takashi Ohashi, all of Yokohama, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 25, 1989, Ser. No. 356,945

Claims priority, application Japan, May 27, 1988, 63-129987; May 27, 1988, 63-129988

Int. Cl.[5] C08G 18/14

U.S. Cl. 521—136 7 Claims

1. A method for producing a phenol resin foam which comprises blending a resol phenol resin, a blowing agent and a catalyst; and foaming the resultant blend, said resol phenol resin comprising a mixture of a low molecular weight resol phenol resin with a number average molecular weight of less than 200 and a high molecular weight resol phenol resin with a number average molecular weight of greater than 200 are mixed at a weight ratio of from 5/95 to 80/20.

5,008,298

EXPANDABLE THERMOPLASTIC RESIN BEADS

Richard B. Allen, Pittsfield, Mass.; William E. Gibbs, Chesapeake, Va., and Lynn M. Hans, Pittsfield, Mass., assignors to General Electric Co., N.Y.

Division of Ser. No. 502,095, Mar. 30, 1990, Pat. No. 4,968,466, which is a division of Ser. No. 384,774, Jul. 24, 1989, Pat. No. 4,920,153, which is a division of Ser. No. 232,900, Aug. 16, 1988, Pat. No. 4,874,796, which is a division of Ser. No. 62,004, Jun. 12, 1987, Pat. No. 4,782,098. This application Aug. 29, 1990, Ser. No. 574,703

Int. Cl.[5] C08J 9/22

U.S. Cl. 521—139 7 Claims

1. A thermoformed structure of an interpolymer of from 1 to 50 parts of a polyphenylene ether resin and from 99 to 50 parts of a polymerized vinyl aromatic monomer per 100 parts of resin and monomer foam prepared by the method which comprises:

(a) subjecting a sheet of said foam having a density of less than 20 lbs./ft.^{3} to a first temperature sufficient to permit a shaped formation to be effected therein;

(b) effecting a shape in said sheet while at said temperature; and

(c) reducing the temperature of said sheet to a second temperature permitting permanent retention of said shape in said sheet at or below said second temperature.

5,008,299

RIGID POLYURETHANE FOAMS WITH LOW THERMAL CONDUCTIVITIES

Benjamin W. Tucker, Bethany, and Debkumar Bhattacharjee, Meriden, both of Conn., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 282,369, Dec. 9, 1988, abandoned. This application Feb. 20, 1990, Ser. No. 482,380

Int. Cl.[5] C08G 18/42, 18/48

U.S. Cl. 521—159 18 Claims

1. In a rigid cellular polyurethane prepared by bringing together under foam forming conditions an aromatic polyisocyanate and a polyhydric combination comprising (a) a polyester polyol derived from crude reaction residues or from scrap polyester resins and (b) a conventional polyol, the improvement which comprises employing as said conventional polyol (b) from about 5 to about 30 percent by weight based on the combined weight of (a) and (b) of a cross-linking polyether polyol to result in an initial insulation K factor of consistently about 0.093 to about 0.100 btu-in/hr. ft^2°F. in said polyurethane.

5,008,300

VISIBLE LIGHT RAY-CURABLE MONOMERIC COMPOSITION FOR FASTENING LOOSE TEETH

Takayuki Makino, Otake; Nobuhiro Mukai, Hiroshima, and Hitoshi Ige, Otake, all of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed Sep. 11, 1989, Ser. No. 405,891

Claims priority, application Japan, Sep. 16, 1988, 63-230062

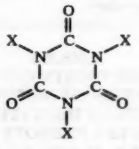
Int. Cl.[5] A61K 6/00; C08F 26/06, 226/06

U.S. Cl. 522—8 10 Claims

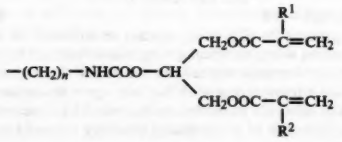
1. A visible light ray-curable monomeric dental adhesion composition consisting essentially of:

(a) a filler component consisting of at least one type of fine, solid particles having an average size of from 0.01 to 100 μm and in an amount of from 40% to 85% base on the total weight of the monomeric composition;

(b) a polyfunctional monomer component consisting of at least one type of radical polymerizable, polyfunctional monomer selected from the group consisting of 2,2-bis[4-(methacryloxyethoxy)phenyl]propane and a hexafunctional urethane acrylate compound of the formula:



wherein X is a group of the formula:



n is an integer of 1 to 10, and R^1 and R^2 are each selected from the group consisting of a hydrogen atom and a methyl radical;

(c) a monofunctional monomer component comprising at least one type of radical polymerizable, monofunctional monomer selected from the group consisting of 2-hydroxyethyl methacrylate, 2-methacryloyloxyethyl phosphate, benzyl methacrylate, and 2-ethylhexyl methacrylate;

the monofunctional monomer component (c) being pres-

ent in an amount of from 1% to 80% based on the total weight of the polyfunctional monomer component (b) and the monofunctional monomer component (c), and the polyfunctional monomer component (b) and the monofunctional monomer component (c) being present in a total amount of from 15% to 80% based on the total weight of the monomeric composition; and

(d) a photopolymerization initiator; said monomeric composition having a viscosity of 1,000 to 500,000 cps at a temperature of 25° C.

5,008,301

ULTRAVIOLET CURING CONFORMAL COATING WITH DUAL SHADOW CURE

William E. Dennis, and Bernard VanWert, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 21, 1989, Ser. No. 313,407

Int. Cl.[5] G08G 77/06; C08G 77/20

U.S. Cl. 522—13 **32 Claims**

1. In an ultraviolet radiation curable composition comprising a mixture of (A) an acrylamide functional polydiorganosiloxane present in an amount of at least 10 weight percent and is an acrylamide polyorganosiloxane having at least two organic groups which have acrylamide group functionality bonded to silicon atoms through Si—C bonds and on the average at least 20 but less than 1500 siloxane units per molecule, the organic groups bonded to the silicon atoms other than those having the acrylamide group functional are selected from the group consisting of methyl and phenyl; (B) a methacryloxyalkyl functional and alkoxy functional polydiorganosiloxane present in an amount of at least 20 weight percent and is a polydiorganosiloxane having endgroups where there are two alkoxy groups per endgroup bonded to silicone through an Si—O bond and one methacrylate group bonded to silicon atoms through Si—C bonds and having on the average less than 350 diorganosiloxane units per molecule, said diorganosiloxane units being selected from dimethylsiloxane units, diphenylsiloxane units, and methylphenylsiloxane units wherein at least 50 percent of the organic groups of the diorganosiloxane are methyl; (C) a photoinitiator, and (D) an organic titanate, the improvement comprising increasing the storage stability by the addition of (E) 1,1-bis-tertiary-butylperoxy cyclohexane in a sufficient quantity to also provide cure activated by heat in areas shadowed from ultraviolet radiation.

5,008,302

TITANOCENES, THE USE THEREOF, AND N-SUBSTITUTED PYRROLES

Rinaldo Hüsler, Marly, Switzerland; Bernd Klingert, Inzlingen, Fed. Rep. of Germany; Manfred Rembold, Aesch, and Eginhard Steiner, Füllinsdorf, both of Switzerland, assignors to Ciga-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 21, 1988, Ser. No. 273,522

Claims priority, application Switzerland, Dec. 1, 1987, 4683/87

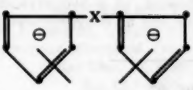
Int. Cl.[5] B01J 31/00; C08F 2/50, 4/76; C07D 207/00

U.S. Cl. 522—14 **21 Claims**

1. A titanocene of the formula I

(I)

in which both R^1 radicals, independently of one another, are cyclopentadienyl⊖, indenyl⊖ or 4,5,6,7-tetrahydroindenyl⊖, each of which is unsubstituted or mono- or polysubstituted by C_1–C_{18}alkyl or -alkoxy, C_2–C_{18}alkenyl, C_5–C_8cycloalkyl, C_6–C_{16}aryl, C_7–C_{16}aralkyl, SiR_3^4, GeR_3^4, cyano or halogen, or both R^1 together are a radical of the formula II

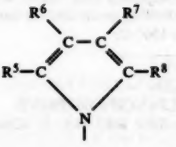


(II)

unsubstituted or substituted as above, in which X is $—CH_2—_n$ where n=1, 2 or 3, unsubstituted or phenyl-substituted alkylidene having 2 to 12 carbon atoms, cycloalklidene having 5 to 7 ring carbon atoms, SiR_2^4, SiR_2^4—O—SiR_2^4, GeR_2^4 or SnR_2^4, and R^4 is C_1–C_{12}alkyl, C_5–C_{12}cycloalkyl, C_6–C_{16}aryl or C_7–C_{16}aralkyl, R^2 is a 6-membered carbocyclic or 5- or 6-membered heterocyclic aromatic ring which is substituted by fluorine atoms in at least one of the two ortho-positions to the titanium-carbon bond, and in which the aromatic ring may contain further substituents, R^3, independently, is as defined for R^2 or R^2 and R^3 together are a radical of the formula III

$$—Q—Y—Q— \quad \text{(III)}$$

in which Q is a carbocyclic aromatic ring where the two bonds are each in the ortho-position to the Y group and the second ortho-position to the titanium-carbon bond is in each case substituted by a fluorine atom and where Q may contain further substituents, and Y is CH_2, alkylidene having 2 to 12 carbon atoms, cycloalkylidene having 5 to 7 ring carbon atoms, NR^4, O, S, SO, SO_2, CO, SiR_2^4, GeR_2^4 or SnR_2^4, and R^4 is as defined above, wherein, in the titanocenes, R^2 and R^3 are substituted by a radical of the formula IV



(IV)

in which R^5, R^6, R^7 and R^8, independently of one another, are a hydrogen atom, linear or branched C_1–C_{18}alkyl, C_2–C_5alkenyl, C_7–C_9aralkyl or -alkaryl, C_8–C_{10}alkaralkyl, C_6–C_{10}aryl, 2-furyl, C_3–C_8cycloalkyl, C_5–C_8cycloalkenyl, C_2–C_{12}alkanoyl or C_2–C_{12}alkoxycarbonyl each of which is unsubstituted or substituted by C_2–C_8dialkylamino or -aminomethyl, bis-[2-(C_1–C_4alkoxy)ethyl]-amino or -aminomethyl, morpholino, morpholinylmethyl, piperidino, piperidinylmethyl, N-methylpiperazino, N-methylpiperazinylmethyl, pyrrolidino, pyrrolidinylmethyl, quaternary C_3–C_{10}trialkylammonium or -ammoniummethyl, C_1–C_{12}alkoxy, $—OCH_2CH_2)_1$0-C_1–C_{16}alkyl in which 1 is a number from 1 to 20, 1,3-dioxolan-2-yl, 4-methyl-1,3-dioxolan-2-yl, $—OCH_2CH_2O—$, C_1–C_{12}alkoxycarbonyl, C_2–C_{12}alkanoyloxy, C_2–C_{12}alkanoyl, C_1–C_{12}alkylthio, halogen, cyano or SiR_3^4 in which R^4 is as defined above; or are —CHO, $—SiR_3^4$ or $—GeR_3^4$ in which R^4 is as defined above; or R^5 and R^6 and/or R^7 and R^8 or R^6 and R^7 in each case together are $—(CH_2)_3—$, $—(CH_2)_4—$, —CH=CH—CH=CH—, —CH=CH—$C(R^{11})$=CR—, $—CH_2OCH_2—$ or $—CH_2N(C_1$–C_4alkyl)$CH_2—$ in which R^{11} is hydroxyl, C_1-C_4alkoxy or C_2–C_4alkanoyloxy.

17. A method of photopolymerizing a non-volatile, monomeric, oligomeric or polymeric compound containing at least one polymerizable, ethylenically unsaturated double bond, which comprises

adding an effective photoinitiating amount of at least one titanocene of formula I according to claim 1 to said compound, and

irradiating the composition obtained.

18. A method according to claim 17 wherein at least one additional photoinitiator is also added.

19. A method according to claim 18 wherein the additional photoinitiator is selected from the group consisting of a ben-

zoin alkyl ether, a benzophenone, a benzil ketal, a 4-aroyl-1,3-dioxolane, a dialkoxyacetophenone, an α-hydroxyacetophenone, an α-aminoacetophenone and an α-hydroxycycloalkyl phenyl ketone.

5,008,303

MOLDING COMPOSITION FOR MAKING CASTING PATTERNS

Oswald Gasser, Seefeld; Rainer Guggenberger, Herrsching, and Klaus Ellrich, Wörthsee, all of Fed. Rep. of Germany, assignors to ESPE Stiftung & Co. Produktions- und Vertriebs KG, Seefeld, Fed. Rep. of Germany

Filed Jan. 26, 1990, Ser. No. 471,087

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1989, 3902417

Int. Cl.[5] B22C *7/00, 9/02;* **C08F** *2/00*

U.S. Cl. 522—64 **7 Claims**

1. A molding composition, for making casting patterns, comprising:

(a) 10–99.89% by weight of at least one of the group consisting of di and polyfunctional acrylic acid and methacrylic acid ester, all of which burn without leaving a residue;

(b) 0.01–5% by weight of an initiator system that can initiate the radical polymerization;

(c) 0–80% by weight of at least one of the group consisting of organic fillers, pigments, and other auxiliary substances, all of which burn without leaving a residue, whereby the quantity particulars of the respective components of (a), (b), and (c) are each related to the total amount of (a)+(b)+(c); and

(d) 0.1–30% by weight, with respect to component (a), of a chemically inert organic compound that burns without leaving a residue and has a boiling point and/or sublimation point in the range of >150° C.

5,008,304

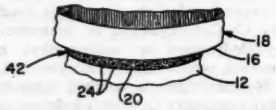
ORTHODONTIC APPLIANCE ADHESIVE

Bradley A. Kmentt, 2616 Mayfield Rd., No. 2, Cleveland Heights, Ohio 44106

Filed May 17, 1989, Ser. No. 353,620

Int. Cl.[5] C08J *7/00*

U.S. Cl. 523—118 **12 Claims**



1. An adhesive composite, comprising:

an adhesive material; and

a plurality of release particles suspended within said adhesive material, said particles being coated with a hydrophobic coating for repelling said adhesive material to remain substantially unattached thereto.

5,008,305

TREATED SILICA FOR REINFORCING SILICONE ELASTOMER

Linda D. Kennan; Theodore L. Knapp; Carl M. Monroe, and Olgerts Skostins, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 6, 1989, Ser. No. 306,193

The portion of the term of this patent subsequent to Jan. 15, 2008, has been disclaimed.

Int. Cl.[5] C08K *9/06*

U.S. Cl. 523—212 **11 Claims**

1. An improved reinforcing silica filler having a surface area of greater than 50 m^2/g, said surface having been treated by mixing 100 parts by weight of silica, having from 0.5 to 6 parts by weight of adsorbed moisture, with a treating mixture comprising from 1 to 30 parts by weight of volatile treating agent of the formula $R_xSi(OR')_{4-x}$, wherein R is a alkyl, alkenyl, or aryl radical having from 1 to 6 carbon atoms which may be substituted with halogen atoms, R′ is an alkyl radical having from 1 to 3 carbons atoms, x is 1 or 2, and R and R′ are chosen so that the vapor pressure of the alkoxysilane equals or exceeds 0.0001 atmosphere at treatment temperature, for a period of time sufficient to allow the desired amount of treating agent to be adsorbed onto the surface of the particulate filler, wherein the volatile treating agent comprises a combination of from 0.2 to 10 parts by weight of volatile treating agent of the formula $Vi_xSi(OR')_{4-x}$ and from 0.2 to 15 parts by weight of volatile treating agent of the formula $Ph_xSi(OR')_{4-x}$, where Vi is vinyl radical and Ph is phenyl radical.

5,008,306

REINFORCED THERMOPLASTICS SHEET AND ITS MANUFACTURING PROCESS

Michel Goguelin, Charavines, France, assignor to Exxon Chemical Patents Inc., Florham Park, N.J.

Filed Jul. 22, 1988, Ser. No. 223,022

Claims priority, application France, Jul. 23, 1987, 87 10490

Int. Cl.[5] C08K *7/00*

U.S. Cl. 523—220 **26 Claims**

1. A process for preparing by the wet method a reinforced thermoplastics semi-finished product in sheet form, which process comprises the following steps:

(a) mixing

(i) a first aqueous dispersion of an ionic dispersing agent having an ionic charge with reinforcing fibers, and

(ii) a second aqueous dispersion containing at least one thermoplastics polymer powder and at least one ionic polymer additive of opposite charge to that of the ionic dispersing agent of the first dispersion, to form a mixture,

(b) incorporating into the mixture a flocculating agent in ionic polymer form, of high molecular weight and of charge opposite to that of said mixture, and

(c) draining the resulting suspension and drying the resulting semi-finished product.

5,008,307

LIQUID SILICONE RUBBER COMPOSITION CAPABLE OF YIELDING A THERMAL CONDUCTIVE VULCANIZED PRODUCT

Hiroshi Inomata, Takasaki, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Japan

Continuation of Ser. No. 178,167, Apr. 6, 1988, abandoned. This application Dec. 11, 1989, Ser. No. 449,330

Claims priority, application Japan, Apr. 6, 1987, 62-83990

Int. Cl.[5] C08K *7/08*

U.S. Cl. 523—220 **13 Claims**

1. A liquid silicone rubber composition capable of yielding a vulcanized product having good thermal conductivity, said composition comprising:

100 parts by weight of an organopolysiloxane having the following average unit formula

$$R_XSiO_{(4-X)/2}$$

in which each R represents an unsubstituted or substituted monovalent hydrocarbon group, and X is a value of 1.8 to 3.0, the organopolysiloxane containing at least 0.1 mole % of an aliphatic unsaturated group in one molecule and having a viscosity of from 50 to 10,000 centistokes at 25° C.;

from 0.1 to 50 parts by weight of an organohydrogenpolysiloxane having at least two ≡SiH bonds in one molecule;

from 270 to 900 parts by weight of an alumina filler made of (a) from 10 to 95 wt % of an alumina powder having a substantially spherical shape and an average size of from

10 to 50 micrometers and, correspondingly, (b) from 90 to 5 wt % of an alumina powder having an average size less than 10 micrometers; and

a catalytic amount of platinum or a platinum-containing compound catalyst for the addition reaction between the organopolysiloxane and the organohydrogenpolysiloxane.

5,008,308

THERMAL ADHESIVE COATING COMPOSITION BASED ON EPOXY RESIN, HIGH TG POLYMER, AMINE CURING AGENT AND FILM FORMING AGENT

Teruyuki Takahashi, Ashiya, and Mitsuru Kohno, Sanda, both of Japan, assignors to Kawasaki Steel Corp., Hyogo, Japan

Filed Feb. 17, 1989, Ser. No. 312,883

Int. Cl.[5] C08L *63/00*

U.S. Cl. 523—406 **2 Claims**

1. Thermal adhesive coating composition consisting essentially of

(A) an emulsion of a thermoplastic synthetic resin having a glass transition temperature of not lower than 60° C.,

(B) an emulsion of an epoxy resin,

(C) an amine base curing agent for the epoxy resin, said curing agent being capable of reacting with said component (B) when heated, and

(D) a film forming assistant agent having solubility in water at 20° C. of not higher than 20g/100cc and having solubility therein of water at 20° C. of not lower than 0.5g/100cc, the weight ratio of the solid resin contents in said component (A) to those in said component (B) being 60/40 to 98/2.

5,008,309

BALANCING PUTTY

Hiromitu Ibe, Kosai; Ichiro Akutagawa, Nagareyama, and Kunimitsu Matsuzaki, Yono, all of Japan, assignors to Asmo Co., Ltd. and Somar Corporation, both of, Japan

Filed Apr. 20, 1989, Ser. No. 340,734

Int. Cl.[5] C08K *3/30, 3/08*

U.S. Cl. 523—442 **8 Claims**

1. A balancing putty comprising:

(a) an epoxy resin;

(b) a curing agent capable of curing the epoxy resin when heated at a temperature of 60° C. or more,

(c) a first, finely divided inorganic filler having a specific gravity of 4.0 g/cm^3 or more; and

(d) a second, finely divided inorganic filler comprising a thixotropic agent having a specific gravity of less than 4.0 g/cm^3, said balancing putty having a density of at least 2.0 g/cm^3 and a consistency of 1–12 mm in terms of penetration.

5,008,310

POLYMER COMPOSITES BASED CELLULOSE-V

Alphons D. Beshay, 3595 de Courval, Trois-Rivières, Quebec G8Z 1S8, Canada

Filed May 15, 1989, Ser. No. 353,365

Int. Cl.[5] C08L *89/00;* **C08K** *3/00, 3/34*

U.S. Cl. 524—13 **9 Claims**

1. A composite material comprising a synthetic polymeric or copolymeric material or rubber, and an organic material selected from the group consisting of cellulosic or starch material, wherein said cellulosic or starch material is essentially grafted by a free radical generating process with isocyanate agent.

5,008,311

SUBSTANTIALLY SOLVENT FREE ASPHALTIC AND METHOD RELATING THERETO

Ronald J. Janoski, Chagrin Falls, Ohio, assignor to Tremco Incorporated, Cleveland, Ohio

Filed Mar. 17, 1989, Ser. No. 324,932

Int. Cl.[5] C08L *95/00, 75/08*

U.S. Cl. 524—59 **5 Claims**

1. A substantially solvent-free asphalt based material comprising:

about 15 to about 75 weight parts asphalt;

a compatibalizing agent in an amount greater than about 0.01 weight parts, wherein the amount of compatiblizing agent is not so great as to be capable of dissolving the asphalt;

about 25 to 75 weight parts polyurethane prepolymer in its cured or uncured states; wherein said compatiblizing agent comprises a polymeric material comprising:

a polymer unit, or two such units being either identical or different and linked together by an ester, carbon or ether bond, said unit having the following formula:

$$CH_3—(C_nH_{2n})—R_1$$

wherein:

n is 4 or more, and

R_1 is COOH, COO^-M^+, $COOR_2$ or R_2,

wherein:

M is a metal other than lead, cobalt, tin zirconium or titanium, and R_2 is a substantially saturated organic chain having a backbone substantially comprising carbon-carbon, carbon-oxygen, or carbon-nitrogen linkages, or combinations thereof, wherein the backbone's pendant constituents are either—H or —OH and wherein at least one pendant constituent is —OH.

5,008,312

2,6-POLYALKYLPIPERIDINE-SUBSTITUTED BISLACTAMS AND THEIR USE FOR THE STABILIZATION OF ORGANIC MATERIAL, IN PARTICULAR OF PLASTICS, AND MATERIALS STABILIZED THEREWITH

Alexander Aumueller, Deidesheim; Peter Neumann, Mannheim, and Hubert Trauth, Dudenhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

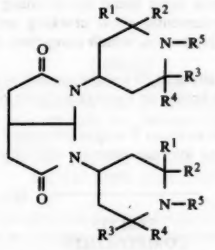
Filed Aug. 7, 1989, Ser. No. 390,216

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1988, 3827641

Int. Cl.[5] C08K *5/3417;* **C07D** *401/00*

U.S. Cl. 524—92 **13 Claims**

1. A bislactam of the formula I



(I)

where R^1, R^2, R^3 and R^4 independently of one another are each C_1–C_4-alkyl, or R^1 and R^2 or R^3 and R^4 or R^1 and R^2 and R^3 and R^4 form a tetra- or pentamethylene radical, and R^5 is hydrogen, carbonyl-C_1–C_8-alkyl, benzoyl, C_1–C_8-alkyl, C_7–C_{10}-phenylalkyl, the phenyl nucleus being unsubstituted or substituted by one or two C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine or bromine radicals, or is C_1–C_3-cyanoalkyl, C_2–C_4-

hydroxyalkyl, C_2- or C_3-aminoalkyl, and the acid addition salts and hydrates of these compounds.

5,008,313

IMPACT MODIFIER FOR THERMOPLASTIC RESIN HAVING GOOD HEAT DISCOLORATION RESISTANCE AND HEAT DETERIORATION RESISTANCE, AND THERMOPLASTIC RESIN COMPOSITION COMPRISING THIS IMPACT MODIFIER

Kazuo Kishida, Hiroshima; Kiyokazu Kitai, Tokyo, and Masaaki Mohri, Hiroshima, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Mar. 27, 1989, Ser. No. 329,256

Claims priority, application Japan, Mar. 28, 1988, 63-074171

Int. Cl.[5] C08K *5/13, 5/524, 5/41*

U.S. Cl. 524—120 13 Claims

1. An impact modifier for a thermoplastic resin having an excellent heat discoloration resistance and heat deterioration resistance, which comprises:

(I) 100 parts by weight of a graft copolymer formed by graft-polymerizing (B) a monomer having a vinyl group in the molecule onto (A) a butadiene polymer and, incorporated therein,

(II) 0.01 to 5 parts by weight of a thioether type heat stabilizer selected from the group consisting of 3,3'-thiodipropionic acid, dialkyl 3,3'-thiodipropionates, pentaerythrityl-tetrakis (3-alkylthiopropionates), tetrakis methanes and bis-sulfides,

(III) 0.01 to 5 parts by weight of a phosphite type heat stabilizer selected from the group consisting of tris(nonylphenyl) phosphite, distearylpentaerythritol diphosphite, tris (2,4-di-tertiary-butylphenyl) phosphite, di(2,4-di-tertiarybutylphenyl) pentaerythritol diphosphite and bis(2,6-di-tertiary-butyl-4-methylphenyl)pentaerythritol diphosphite, and

(IV) 0.01 to 5 parts by weight of a phenol type heat stabilizer having a molecular weight of at least 500 which is selected from the group consisting of 1,1,3-tris(2-methyl-4-hydroxy-5-tertiary-butylphenyl)butane, n-octadecyl-3-(3',5'-di-tertiary-butyl-4'-hydroxyphenyl) propionate, tertrakis methane, triethylene glycol bis and pentaerythrityl tetrakis.

5,008,314

POLYPHENYLENE ETHER COMPOSITIONS RESISTANT TO ENVIRONMENTAL STRESS CRACKING

Gim F. Lee, Jr., Albany, N.Y., assignor to General Electric Co., Selkirk, N.Y.

Filed Dec. 21, 1989, Ser. No. 454,654

Int. Cl.[5] C08K *5/52;* C08L *71/12*

U.S. Cl. 524—143 12 Claims

1. A thermoplastic resin blend for molding articles with resistance to environmental stress cracking and having improved melt flow properties, which comprises, in homogeneous admixture

(a) from about 5 to about 95 weight percent of a polyphenylene ether resin having an average intrinsic viscosity below about 0.4; and

(b) from about 95 to about 5 weight percent of a polystyrene resin having an average intrinsic viscosity above about 0.85.

5,008,315

COMPOSITION

Linda H. Nelson, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 19, 1989, Ser. No. 452,479

The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.

Int. Cl.[5] C08K *5/58*

U.S. Cl. 524—180 13 Claims

1. A composition comprising an admixture of

a polybutylene terephthalate

b a mold release and/or impact improving effective amount of a fluid hydrogenated or non hydrogenated oligomer of an alpha olefin.

5,008,316

INTERNAL LUBRICANT FOR GLASS REINFORCED POLYARYLENE SULFIDE

Lachhman Wadhwa, Plainfield, N.J., and Andrew M. Steurer, Kenton, Ky., assignors to Hoechst Celanese Corporation, Bridgewater, N.J.

Continuation of Ser. No. 159,812, Feb. 25, 1988, abandoned. This application Sep. 1, 1989, Ser. No. 403,047

Int. Cl.[5] C08K *5/20, 3/40*

U.S. Cl. 524—230 30 Claims

1. A molding composition comprising polyarylene sulfide and 0.01 to 2.0 weight percent of an internal lubricant comprising stearyl erucamide to provide said composition with mold release properties.

5,008,317

COMPOSITIONS WHICH CAN BE CROSSLINKED TO FORM FLAME RETARDANT AND/OR TRACKING RESISTANT AND ARC RESISTANT ORGANOPOLYSILOXANE ELASTOMERS

Dietrich Wolfer, Oberndorf, Austria, and Wilhelm Marsch, Haiming, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 14, 1989, Ser. No. 407,003

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1988, 3831478

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—262 20 Claims

1. A composition which can be crosslinked to form flame retardant and/or tracking resistant and arc resistant organopolysiloxane elastomers, comprising a crosslinkable organopolysiloxane composition containing an additive, which is obtained by mixing:

(A) 60 to 80 percent by weight of diorganopolysiloxane having 75 to 85 mol percent of dimethylsiloxane units and 15 to 25 mol percent of vinylmethylsiloxane units,

(B) 20 to 35 percent by weight of a metal oxide selected from the group consisting of titanium dioxide, zirconium dioxide, zinc oxide, Ce(III) oxide and Ce(IV) oxide, with the proviso that only titanium dioxide or zirconium dioxide is used to achieve tracking resistance and arc resistance,

(C) 0.05 to 0.25 percent by weight of platinum, selected from the group consisting of a platinum compound and a platinum complex, calculated as the element, and

(D) 1 to 5 percent by weight of an organosilicon compound having basic nitrogen bonded via carbon to silicon

in which the sum of the percentages of (A) to (D) is equal to 100 percent by weight and the percent by weight is based on the total weight of the additive.

5,008,318

NOVEL COMPOSITE FILM AND PREPARATION THEREOF

Keizou Ishii, Ashiya; Teruaki Kuwajima, Higashiosaka; Hiroshi Miwa, Itami; Akio Kashihara, Hirakata, and Shinichi Ishikura, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 879,583, Jun. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 652,677, Sep. 19, 1984, abandoned. This application Feb. 17, 1989, Ser. No. 313,354

Int. Cl.[5] C08K *5/10*

U.S. Cl. 524—284 2 Claims

1. In a resinous composition consisting essentially of

(a) a liquid medium,

(b) at least one resin which is soluble in said liquid medium (a) and forms a continuous film, and

(c) particles of at least one resin which is insoluble in the combination of said (a) and said (b), an improvement which is characterized by further containing

(d) a microdomain forming agent which is an organic compound fulfilling the requirements:

$R \geqq 160$

at least an $In \geqq 70$

$\Sigma In/R \geqq 0.5$

wherein R represents a quantity of organic characters, In is a quantity of inorganic characters of inorganic group No. n, and n is an integer of 1 and more and corresponds to the number of inorganic groups in the molecule, and forms a composite film consisting essentially of a continuous phase of said resin (b) and a discontinuous phase of microdomains which are 0.03 to 10 microns in size and are aggregates of said resin particles (c).

5,008,319

HOMOGENEOUS MIXTURES OF SOLID ORGANIC ACIDS AND SOLID CATIONIC ESTER-BASED POLYMER FLOCCULANTS

Ronald E. Highsmith, Skaneateles, and Eric H. Larson, Marcellus, both of N.Y., assignors to Polypure, Inc., Solvay, N.Y.

Filed Feb. 1, 1990, Ser. No. 473,351

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—321 **8 Claims**

1. A homogeneous composition of a solid, water soluble organic acid and a solid cationic ester-based polymeric flocculant which is a copolymer of acrylamide and a cationic monomer, said mixture having fewer fine particles than the solid polymer flocculant particles prior to incorporation into said composition, said polymeric flocculant particles being coated by said acid, thereby said mixture being resistant to mechanical segregation or stratification.

5,008,320

PLATINUM OR RHODIUM CATALYZED MULTILAYER CERAMIC COATINGS FROM HYDROGEN SILSESQUIOXANE RESIN AND METAL OXIDES

Loren A. Haluska; Keith W. Michael, both of Midland, and Leo Tarhay, Sanford, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 938,678, Dec. 4, 1986, Pat. No. 4,911,992. This application Dec. 7, 1989, Ser. No. 447,482

Int. Cl.[5] C08K *3/10, 5/07*

U.S. Cl. 524—361 **5 Claims**

1. A composition of matter comprising a hydrocarbon solvent solution of a mixture of (a) hydrogen silesquioxane resin; (b) one or more metal oxide precursors selected from the group consisting of an aluminum alkoxide, a titanium alkoxide and a zirconium alkoxide; and (c) a metal catalyst selected from the group consisting of platinum catalysts and rhodium catalysts, wherein the hydrogen silsesquioxane resin (a) is diluted in the hydrocarbon solvent to low solids, the metal oxide precursor or precursors (b) are present in an amount such that the resultant ceramic coating contains from 0.1 % weight percent up to approximately 30 % weight percent metal oxide, and the metal catalyst (c) is present in an amount sufficient to enhance the oxidation and cure of the hydrogen silsesquioxane resin.

5,008,321

PREPARATION OF STABLE WATER-IN-OIL EMULSIONS OF HYDROLYZED POLYMERS OF N-VINYLAMIDES AND THEIR USE

Heinrich Hartmann, Limburgerhof; Walter Denzinger, Speyer; Michael Kroener, Mannheim; Norbert Sendhoff, Gruenstadt, and Enrique Freudenberg, Schifferstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

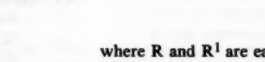
Filed Nov. 20, 1989, Ser. No. 438,034

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1988, 3842820

Int. Cl.[5] C08F *2/32*

U.S. Cl. 524—378 **5 Claims**

1. A stable water-in-oil emulsion of a hydrolyzed polymer of N-vinylamides, of the formula



(I)

where R and R^1 are each H or C_1–C_6-alkyl, prepared by the steps comprising:

(a) polymerization of a compound of the formula I alone or as a mixture of other monoethylenically unsaturated monomers in the presence of polymerization initiator and emulsifiers, in the form of a water-in-oil emulsion, to give a water-in-oil polymer emulsion; and

(b) subsequent hydrolysis of the polymer in the form of the water-in-oil polymer emulsion in the presence of an acid or base and from 1–30% by weight, based on the polymer, of an emulsifier which is obtained by

(A) reacting a C_{10-22}- fatty alcohol with epichlorohydrin in a molar ratio of from 1:0.5 to 1:1.5 to give a glycidyl ether,

(B) reacting the glycidyl ether with (1) a saturated C_{2-6}-alcohol containing from 2–6 OH groups or (2) its monoether with a C_{10-22}- fatty alcohol, in a molar ratio of glycidyl ether to (1) or (2) of from 1:0.5 to 1:6, in the presence of an acid or base, and

(C) alkoxylating the reaction product from (B) with one or more C_{2-4}-alkylene oxides in a molar ratio of from 1:1 to 1:6.

5,008,322

HYDROPHOBIC POLYMER PRODUCTS

Joseph A. Vasta, deceased, late of Wilmington, and by Rita Vasta, executrix, 1412 Jan Dr., Webster Farms, Wilmington, both of Del. 19803

Filed Dec. 23, 1988, Ser. No. 288,911

Int. Cl.[5] C08K *5/04, 5/06*

U.S. Cl. 524—398 **9 Claims**

1. A polymeric product obtained by bringing together, in an organic liquid, in contact with an appropriate polymerization initiator and under conditions suitable for polymerization,

(a) styrene,

(b) 2-ethylhexyl acrylate, 2-ethyl hexyl methacrylate or butyl acrylate,

(c) acrylic acid or methacrylic acid,

(d) polyethylene oxide having a molecular weight M_n of 20,000–400,000 and

(e) a cobalt compound which provides Co^{+2} or Co^{+3} ions.

5,008,323

FLAME RETARDANT PVC RESIN COMPOSITIONS

Nicolai A. Favstritsky, and Robert J. Nulph, both of Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Continuation of Ser. No. 107,236, Oct. 9, 1987, abandoned. This application Sep. 13, 1989, Ser. No. 406,882

Int. Cl.[5] C08K 5/03

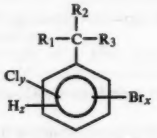
U.S. Cl. 524—469 7 Claims

1. A flame retardant PVC resin composition comprising:

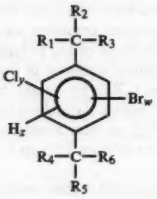
a PVC resin:

a non-flame retardant primary plasticizer;

as a flame retardant plasticizer, an effective amount of a polybrominated higher alkylbenzene, wherein the polybrominated higher alkylbenzene is a compound of the structure:



or



where x is 4 or 5, y is zero or 1, z is zero or 1, w is 2 to 4; where R_1 and R_4 are hydrogen or methyl, and R_2, R_3, R_5, R_6 are alkyl groups ranging independently from 1 to 16 carbon atoms and where the total number of carbon atoms in each of (R_1, R_2 and R_3) and (R_4, R_5 and R_6) ranges from 5 to 17; an effective amount of polybrominated higher alkylbenzene containing about 30–70 percent bromine by weight of the flame retardant plasticizer;

a stabilizer; and

an enhancing agent.

5,008,324

NOVEL DAMPING COMPOSITIONS

Paul C. Killgoar, Jr., Livonia; Marsha A. Samus, Ann Arbor, both of Mich.; Robert D. Koller, Sr., Valbonne, France, and Carl P. Hemenway, Glenside, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 11, 1989, Ser. No. 336,187

Int. Cl.[5] C08K 3/34; C08L 51/00; F16F 1/36, 7/12

U.S. Cl. 524—504 10 Claims

1. A composition useful for damping purposes comprising:

(a) crosslinked elastomer containing microscopically discrete segments of

(b) multi-phase thermoplastic elastomeric polymer having at least two polymeric phases comprising:

(1) an initial linear or lightly crosslinked polymeric phase polymerized from an alpha, beta-unsaturated monomer, wherein said alpha,beta-ethylenically unsaturated monomer comprises from 0 to about two percent by weight of multi-ethylenically unsaturated monomer,

(2) a second polymeric phase in the form of discrete domains of about 2 to about 50 nanometers in diameter dispersed within said initial polymeric phase, wherein said second polymeric phase is polymerized from at least one ethylenically unsaturated monomer comprised of about 5 percent to 100 percent by weight multifunctional monomer having at least two sites of ethylenic unsaturation,

wherein the weight ratio of said second polymeric phase to said initial polymeric phase plus said second polymeric phase is from about 1:100 to about 1:2.

7. A process for damping comprising:

(a) blending

(i) a crosslinkable elastomer;

(ii) a multi-phase thermoplastic elastomeric polymer having at least two polymeric phases comprising:

(1) an initial linear or lightly crosslinked polymeric phase polymerized from an alpha,beta-ethylenically unsaturated monomer wherein said alpha,beta-ethylenically unsaturated monomer comprises from 0 to about two percent by weight of multi-ethylenically unsaturated monomer,

(2) a second polymeric phase in the form of discrete domains of about 2 to about 50 nanometers in diameter dispersed within said initial polymeric phase, wherein said second polymeric phase is polymerized from at least one ethylenically unsaturated monomer comprised of about 5 percent to 100 percent by weight multifunctional monomer having at least two sites of ethylenic unsaturation,

wherein the weight ratio of said second polymeric phase to said initial polymeric phase plus said second polymeric phase is from about 1:100 to about 1:2;

(iii) at least one curative and optionally one or more reinforcing particulate fillers, wherein the ratio of said optional reinforcing particulate filler to said crosslinkable elastomer plus said multi-phase polymer plus said reinforcing particulate filler is up to about 1:2.5;

(b) molding said resultant blend;

(c) curing said blend to form a crosslinked elastomer containing microscopically discrete segments of said multiphase polymer,

(d) placing said cured molded blend between two surfaces, at least one of which is subject to vibrations, and damping said vibrations.

5,008,325

POLYURETHANE-UREA RESINS WITH INCORPORATED HYDROPHOBIC MICROPARTICLE FILLERS

Jorge Soto, Concord; Joginder N. Anand, Clayton, both of Calif., and Richard D. Peffley, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 23, 1990, Ser. No. 498,079

Int. Cl.[5] C08G 18/00; C08L 51/00; C08K 9/00; C08J 3/20

U.S. Cl. 524—504 7 Claims

1. An aqueous polymer dispersion having a continuous aqueous phase in which are dispersed a plurality of polymer particles, wherein a first portion of said polymer particles are polyurethane-urea polymer particles and a second portion of the particles are particles of a hydrophobic polymer to which is grafted a polyurethane-urea polymer, said second portion of particles having an average particle size of about 1000 to about 10,000 Angstroms, wherein said hydrophobic particles constitute about 0.5 to about 10 percent of the total weight of the particles.

5,008,326

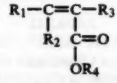
PROCESS FOR PREPARING A FAST CURE, ZERO FORMALDEHYDE BINDER FOR CELLULOSE

Dennis P. Stack, Santa Ana, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

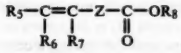
Division of Ser. No. 132,923, Dec. 15, 1987. This application Jul. 27, 1990, Ser. No. 558,667
Int. Cl.[5] C08L 27/00
U.S. Cl. 524—519 28 Claims

1. A process for preparing a fast-curing, zero formaldehyde binder for nonwove cellulosic materials, comprising:

(a) copolymerizing in aqueous solution a mixture comprising one or more first water-soluble comonomers having the general formula:



wherein R_1, R_2 and R_3 are independently selected from hydrogen, halogen, nitro, amino, nitrile and organic radical and R_4 is hydrogen or an organic radical, and one or more second water-soluble comonomers having the general formula:



wherein R_5, R_6 and R_7 are independently selected from hydrogen, halogen, nitro, amino, nitrile, and organic radicals, R_8 is an organic radical having at least 2 carbon atoms and at least one hydroxyl substituent thereon and Z is an organic radical or a covalent bond, said copolymerization being carried out with between about 0.5 and about 4 parts, by weight, of said second comonomer for each part of said first comonomer; and

(b) admixing the product of said copolymerization with a non-formaldehyde emitting latex carrier, in an amount between about 2 percent and about 20 percent, by weight of said latex carrier.

5,008,327

ELECTRODEPOSITION COATING COMPOSITION

Shinji Shirai, Yugawara; Hiroyuki Negishi, Hiratsuka; Nobuyuki Tomihashi, Takatsuki, and Masayuki Yamane, Osaka, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo and Daikin Industries, Ltd., Osaka, both of, Japan

Continuation of Ser. No. 330,029, Mar. 29, 1989, abandoned. This application Aug. 8, 1990, Ser. No. 564,674
Claims priority, application Japan, Mar. 30, 1988, 63-78352
Int. Cl.[5] C09D 5/00; C08K 27/12
U.S. Cl. 524—544 7 Claims

1. An electrodeposition coating composition comprising a fluorine-containing copolymer, a curing agent and an aqueous medium;

said composition having a fluorine ion content of not more than 15 ppm, and

said fluorine-containing copolymer is a copolymer comprising 20 to 80% by mole of a fluoroolefin having the formula (I):

$$CX^1X^2{=}CF_2 \quad (I)$$

wherein X^1 and X^2 are the same or different and each is a hydrogen, a fluorine, a chlorine or a trifluoromethyl group, and 2 to 60% by mole of a hydroxy vinyl ether having the formula (II):

$$CH_2{=}CH{-}O{-}R^1{-}OH \quad (II)$$

wherein R^1 is a bivalent aliphatic group with 2 to 10 carbon atoms, and having carboxyl groups partially neutralized with a basic compound and having an acid value of 30 to 120.

5,008,328

AQUEOUS ORGANOSILICON RESIN COATING COMPOSITIONS

Noboru Nakai, Hiratsuka, and Osamu Isozaki, Yokohama, both of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Continuation of Ser. No. 895,098, Aug. 11, 1986, abandoned. This application Feb. 21, 1989, Ser. No. 313,367
Claims priority, application Japan, Aug. 21, 1985, 60-183275
Int. Cl.[5] C08K 5/06, 83/08
U.S. Cl. 524—759 17 Claims

1. An aqueous organosilicon resin coating comprising:

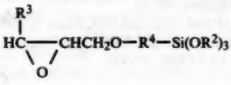
(I) an organosilicon resin which is a condensation product prepared from

(i) a first component which is at least one member selected from the group consisting of (a) an organosilicon compound represented by the formula

$$R^1{}_aSi(OR^2)_{4-a} \quad (A)$$

wherein R^1 is a hydrocarbon group having 1 to 12 carbon atoms, R^2 is a hydrocarbon group having 1 to 8 carbon atoms and a is 0, 1 or 2, and (b) a low condensate of the organosilicon compound represented by the formula (A);

(ii) a second component which is at least one member selected from the group consisting of (a) an organosilicon compound represented by the formula



(B)

wherein R^3 is a hydrogen atom or a methyl group, R^4 is a bivalent hydrocarbon group having 1 to 8 carbon atoms, and R^2 is as defined above, and (b) a low condensate of the organosilicon compound represented by the formula (B), wherein the first component and the second component are used in a ratio of the former to the latter of 50–99.5:0.5–40 mole %; and

(iii) a third component which is at least one tertiary amine compound selected from the group consisting of trimethylamine, triethylamine, tri-n-butylamine, N-methyldiethanolamine, N-dimethylethanolamine, triethanolamine, diethylaminoethanol, N,N-dimethylcyclohexylamine, pyridine, α-picoline, β-picoline, γ-picoline, 2,4-lutidine, 2,6-lutidine, N-methylpiperidine, and N-methylpyrrolidine,

said organosilicon resin containing a quaternary ammonium group which is formed by a reaction of the tertiary amine compound with a glycidyl group in the organosilicon resin; and

(II) an aqueous medium.

5,008,329

PROCESS FOR PRODUCING AQUEOUS COPOLYMER DISPERSION FROM A VINYL MONOMER MIXTURE

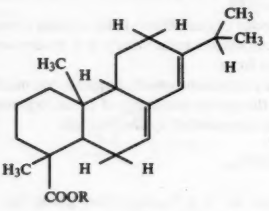
Tadashi Abe; Masahiro Aoki; Tsunenori Takahashi, and Takeshi Awata, all of Mie, Japan, assignors to Mitsubishi Yuka Badische Co., Ltd., Yokkaichi, Japan

Continuation of Ser. No. 181,670, Apr. 14, 1988, abandoned. This application Oct. 10, 1989, Ser. No. 419,001
Claims priority, application Japan, May 19, 1987, 62-120239
Int. Cl.[5] C08L 93/04
U.S. Cl. 524—798 3 Claims

1. A process for producing an aqueous copolymer disper-

sion, wherein the polymer has a glass transition point ranging from −10° C. to −90° C., which consists of:

emulsion polymerizing, in an aqueous medium containing a polymerization initiator, 100 parts by weight of a vinyl monomer mixture consisting of (A) from 60% to 99.8% by weight of 2-ethylhexyl acrylate, (B) from 0.2 to 10% by weight of an α,β-unsaturated carboxylic acid, and (C) up to 30% by weight of a vinyl monomer other than monomers (A) and (B) in the presence of an emulsifying agent and from 0.01 to 10 parts by weight of a compound having an allyl hydrogen atom selected from the group consisting of abietic acid and derivatives thereof having the formula:



wherein R is hydrogen or alkyl and the encircled H groups represent allyl hydrogen atoms, and allyl alcohol.

5,008,330

MOLDING COMPOSITIONS WITH ACRYLONITRILE-EPDM-STYRENE COPOLYMERS

Michael K. Laughner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 320,680, Mar. 8, 1989, abandoned. This application Sep. 22, 1989, Ser. No. 411,279

Int. Cl.[5] C08L *69/00*

U.S. Cl. 525—67 **12 Claims**

1. A moldable composition comprising:

(A) about 20 to about 95% by weight of a carbonate polymer selected from the group consisting of

(i) randomly branched carbonate polymers,

(ii) linear carbonate polymers, and

(iii) blends of randomly branched carbonate polymers with linear carbonate polymers,

(B) about 5 to about 75% by weight of a copolymer consisting of acrylonitrile/ethylene-propylene-diene rubber/styrene and optionally one or more monomers selected from the group consisting of α-methylstyrene, acrylic acid, methacrylic acid, methacrylonitrile, methyl acrylate, ethyl acrylate, n-butyl acrylate, isobutyl acrylate, methyl methacrylate, n-butyl methacrylate, isobutyl methacrylate, glycidyl methacrylate and maleic anhydride.

(C) about 1 to about 20% by weight of a core-shell graft copolymer having a butadiene polymer core and having an outer shell of a polymerized alkyl (meth)acrylate.

5,008,331

THERMOPLASTIC RESIN COMPOSITION

Kouzo Kawashima, Yokkaichi; Takao Morikawa, Yokohama; Teruo Aoyama, and Akira Kamiya, both of Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Division of Ser. No. 183,897, Apr. 20, 1988, abandoned. This application Feb. 27, 1990, Ser. No. 488,429

Claims priority, application Japan, Apr. 21, 1987, 62-96269

Int. Cl.[5] C08L *51/04*

U.S. Cl. 525—84 **23 Claims**

1. A thermoplastic resin composition, consisting essentially of (A) 10–90% by weight of a graft copolymer obtained by polymerizing a monomer mixture consisting of an alkenyl cyanide compound and an aromatic alkenyl compound in the presence of a butadiene rubber latex in which 50–96% by weight of butadiene rubber particles (A-1) having an average particle diameter of at least 1,300 Å but not more than 2,000 Å, and 3–50% by weight of butadiene rubber particles (A-2) having an average particle diameter of 2,200 Å or more are dispersed, provided that the alkenyl cyanide compound content in the resin component of the graft copolymer (A) is at least 10% by weight but 29% or less by weight, and (B) 90–10% by weight of a copolymer of an alkenyl cyanide compound with an aromatic alkenyl compound having an alkenyl cyanide compound content of 31–40% by weight, the difference in the bound alkenyl cyanide compound content between the resin component of the graft polymer (A) and the copolymer (B) being 3–30% by weight and the proportion of the rubber component in the composition being 5–30% by weight.

5,008,332

THERMOPLASTIC RESIN COMPOSITION

Hironari Sano, and Kenyu Ohno, both of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1987, Ser. No. 122,135

Claims priority, application Japan, Nov. 19, 1986, 61-275699

Int. Cl.[5] C08L *53/00, 67/02, 71/12, 77/02*

U.S. Cl. 525—92 **11 Claims**

1. A thermoplastic resin composition comprising components (1), (2) and (3) in which component (2) forms a continuous phase, component (1) forms a continuous phase intermingled with component (2) or forms a dispersed phase in component (2), and component (3) is dispersed in component (1), at least a part of component (3) having a continuous structure;

(i) said component (1) ranging from 10 to 55% by weight and being an amorphous polymer having a glass transition temperature of at least 90° C. and being selected from the group consisting of polyphenylene ether, polycarbonate, amorphous polyamide having a crystallinity less than 15%, polystyrene and acrylonitrile-butadiene-styrene resin;

(ii) component (2) ranging in an amount from 40 to 85% by weight and being a crystallized polymer which shows at least partial crystalline properties, has a melting point of at least 100° C. and is at least one material selected from the group consisting of polyolefins, crystalline polyamides having a crystallinity of at least 15%, and polyalkylene terephthalates; and

(iii) component (3) ranging in an amount from 5 to 35 % by weight of a rubbery polymer having a storage shear modulus at room temperature of 5×10^8 dyne/cm^2 or less, all weight percents being based on the weight of the thermoplastic resin composition, wherein the dispersed state of component (3) is such that the number of the rubber-like dispersed particles having compactness C (obtained by the expression $C=4\pi S/L^2$, wherein S is the area of the rubbery polymer phase and L is the circumferential length thereof) of 0.6 or less is in the range of from 30 to 90% to the number of whole rubbery polymer particles.

5,008,333

COMPATIBLE POLYPHENYLENE ETHER-LINEAR POLYESTER BLENDS HAVING IMPROVED IMPACT STRENGTH

John B. Yates, III, Glenmont, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Co., Selkirk, N.Y.

Filed Jun. 13, 1988, Ser. No. 206,248

Int. Cl.[5] C08L *53/02, 71/12*

U.S. Cl. 525—92 **13 Claims**

1. A thermoplastic composition comprising: 100 parts by weight of the following resinous components and any reaction products thereof, all percentage proportions being by weight of total resinous components:

(A) about 15 to 50% of at least one polyphenylene ether, or a blend thereof with at least one polystyrene;

(B) about 20 to 80% of at least one poly(alkylene dicarboxyl-

ate), the weight ratio of component A to component B being at most 1.2:1;

(C) from 3 to about 50% of at least one polymer containing a substantial proportion of aromatic polycarbonate units and having a weight average molecular weight of at least about 40,000 as determined by gel permeation chromatography relative to polystyrene, or a blend thereof with a styrene homopolymer; and

(D) about 1 to about 15% of at least one elastomeric impact modifier which is compatible with component (A); and

(E) about 1 to about 50 parts by weight of an alkylene acrylate copolymer per 100 parts of resinous components A through D.

5,008,334

RESINS OF EPOXY/AROMATIC DIOL COPOLYMER AND BLOCK COPOLYMER OF EPOXY/AROMATIC DIOL COPOLYMER AND A EPOXY-CAPPED POLYBUTADIENE (CO)POLYMER

Paul J. Harris, West Bloomfield, and Ronald T. Wojcik, Rochester Hills, both of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Feb. 28, 1989, Ser. No. 316,845

Int. Cl.[5] C08G *59/14, 63/66;* C08L *63/10*

U.S. Cl. 525—109 **34 Claims**

1. A resin comprising a mixture of

(i) an epoxy/diol copolymer which is the reaction product of a diol and one or more diepoxides; and

(ii) an A-B-A block copolymer wherein

A represents blocks of an epoxy/diol copolymer which is the reaction product of a diol and one or more diepoxides; and

B represents blocks of an epoxy capped, carboxyl-terminated polybutadiene or polybutadiene/acrylonitrile copolymer.

5,008,335

POWDER COATING COMPOSITIONS OF POLYEPOXIDES, ACRYLIC COPOLYMERS AND ALIPHATIC OR POLYESTER DIBASIC ACIDS

Paul H. Pettit, Jr., Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 31,293, Mar. 26, 1987, Pat. No. 4,921,913, Continuation of Ser. No. 763,377, Aug. 7, 1985, abandoned. This application Jan. 29, 1990, Ser. No. 471,758

Int. Cl.[5] C08L *33/02, 63/02, 63/04*

U.S. Cl. 525—111 **2 Claims**

1. A thermosetting powder coating composition comprising a coreactable particulate mixture of:

(A) 40 to 80 percent by weight of an acid group-containing acrylic polymer having a glass transition temperature in the range of 40° C. to 100° C., and a number average molecular weight of 1500 to 20,000,

(B) 5 to 30 percent by weight of an epoxy novolac resin having a number average molecular weight of 500 to 1400 which is compatible with (A), and

(C) 5 to 30 percent by weight of an epoxy resin which has a number average molecular weight of at least 100 and which is incompatible with (A).

the percentage by weight of (A), (B) and (C) based on weight of resin solids, and which composition also contains a dibasic acid selected from the class consisting of aliphatic dicarboxylic acids containing from 4 to 20 carbon atoms, a polyester terminated with carboxylic acid groups, and mixtures thereof.

5,008,336

HIGH SOLIDS COATING COMPOSITIONS

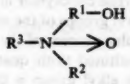
Forrest A. Richey, Jr., Charleston, and Kenneth L. Hoy, St. Albans, both of W. Va., assignors to Union Carbide Chemicals And Plastics Technology Corporation, Danbury, Conn.

Filed Jan. 30, 1990, Ser. No. 472,662

Int. Cl.[5] C08F *8/32, 20/02*

U.S. Cl. 525—124 **10 Claims**

1. Coating composition comprising polyol-containing polymer, at least one cross-linking agent reactive with hydroxyls, and at least one reactive diluent of the formula



wherein R^1 is alkylene of 1 to about 6 carbon atoms; R^2 is alkyl or alkylhydroxy or alkylene alkyl ether of 1 to about 20 carbon atoms; and R^3 is alkyl of 1 to about 10 carbon atoms, aryl of 6 to 10 carbon atoms, alkaryl of 7 to 10, carbon atoms, or aralkyl of 7 to 10 carbon atoms which R^1, R^2 and R^3 may be substituted with hydroxy, with the proviso that the reactive diluent contains at least two reactive hydroxyl groups.

5,008,337

METHOD OF CROSSLINKING RUBBER

Raman Patel, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 179,814, Apr. 11, 1988, abandoned. This application Oct. 20, 1989, Ser. No. 424,413

Int. Cl.[5] C08L *13/00, 25/02*

U.S. Cl. 525—130 **10 Claims**

1. The method of crosslinking a carboxylic-functionalized rubber comprising heating the rubber in the presence of a polyfunctional isocyanate functionalized compound and an accelerator which is a metal salt of an organic acid.

5,008,338

HYDROXYETHERS OF EPOXIDIZED POLYBUTENES

Wayne T. Riddick, Oak Park, and Vincent F. Smith, Jr., Big Rock, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jan. 31, 1989, Ser. No. 304,766

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—177 **6 Claims**

1. A process of preparing hydroxyether terminated polybutenes from epoxidized polybutenes, wherein said epoxidized polybutene has been prepared from a polybutene having only one functional terminal double bond in an olefin structure about 70% trisubstituted, wherein molecular weight of polybutene portion of said epoxidized polybutene is from about 200 to about 20,000, which process comprises reacting a mono- or polyfunctional hydroxyl compound of from one to 2000 carbon atoms with said epoxidized polybutene in the presence of an acid catalyst selected from the group consisting of strongly acidic resin catalysts useful for non-aqueous heterogeneous acid catalysis, catalysts with non-nucleophilic anoins which do not react with said epoxide group, and Lewis acids selected for the group consisting of $ZnCl_2$, $SnCl_4$, $TiCl_3$, $TiCl_4$, $AlCl_3$, $SbCl_5$, and $FeCl_3$, wherein the molar ratio of said hydroxyl compound to said epoxidized polybutene is at least about 1:1 at a temperature within the range of from about −20° C. to about 150° C.,, and said acid catalyst is present in an amount of from about 0.2 to about 15 mole % of said epoxidized polybutene.

5,008,339

NOVEL POLYELECTROLYTE COPOLYMER AND MIXED POLYMERS AND COMPOSITES THEREOF

Fred C. Anson, Altadena, and Donald D. Montgomery, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 5,008, Jan. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 680,795, Dec. 12, 1984, abandoned. This application Jul. 8, 1988, Ser. No. 216,847

Int. Cl.[5] C08F *8/30*

U.S. Cl. 525—181 **14 Claims**

1. A mixed polymer containing 10–90 percent by weight of a random, ternary, styrene copolymer in which 10–80 molecular percent of the phenyl groups of the styrene units are unsubstituted; 10–35 molecular percent of the phenyl groups of the styrene units are substituted with quaternized trialkylamine groups in which each alkyl group is the same and contains from 1 to 6 carbon atoms, and 15–45 molecular percent of the phenyl groups of the styrene units are substituted with quaternized tri-(hydroxyalkyl) amine groups in which each hydroxyalkyl is the same and contains 1 to 6 carbon atoms; and

the remainder of the mixed polymer consisting essentially of a cationic, polyelectrolyte copolymer and said mixed polymer segregating into domains having a dimension of at least 100 Angstroms.

5,008,340

CURABLE ADHESIVES

Robert Guerra, Fremont, and Pravin Soni, Union City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 21, 1988, Ser. No. 288,331

Int. Cl.[5] C08L *23/26, 27/08*

U.S. Cl. 525—193 **12 Claims**

1. An adhesive composition comprising:

(a) about 30 to about 50% by weight of a thermoplastic vinylidene fluoride homopolymer or copolymer;

(b) about 5 to about 40% by weight of an elastomeric vinylidene fluoride;

(c) about 5 to about 25% by weight of a thermoplastic ethylene copolymer comprising at least 50 mole% of units derived from ethylene and at least 5 mole % of units derived from at least one unsaturated comonomer containing at least one polar group;

(d) about 1 to about 10% by weight of a crosslinking agent component; and

(e) 0 to about 20% by weight of a tackifier; all percentages by weight being based on the total weight of the five components.

5,008,341

TRANSPARENT THERMOPLASTIC BLENDS

Rainer Bueschl, Roedersheim-Gronau, and Peter Klaerner, Battenberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 31, 1989, Ser. No. 401,239

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1988, 3831874

Int. Cl.[5] C08L *33/06, 45/00, 25/02, 27/08*

U.S. Cl. 525—216 **10 Claims**

1. A transparent polyblend formed from

(a) 99.9–0.1% by weight of a styrene or α-methyl styrene and acrylonitrile copolymer containing from 11 to 30% by weight of acrylonitrile monomer units, and

(b) 0.1–99.9% by weight of a cycloalkyl (meth)acrylate homopolymer or copolymer with up to 99.9% by weight of units of methyl methacrylate.

5,008,342

EPOXY CONTAINING IMPACT MODIFIERS FOR THERMOPLASTIC RESINS

Shrikant V. Phadke, 14416 Brittmore Ave., Baton Rouge, La. 70817

Continuation-in-part of Ser. No. 4,088, Jan. 16, 1987, abandoned. This application Aug. 23, 1988, Ser. No. 235,364

Int. Cl.[5] C08F *255/02;* **C08L** *51/00, 67/00, 77/00*

U.S. Cl. 525—263 **21 Claims**

1. A modifier for improving the impact and knitline strength of polyester or polyamide resins in which it is dispersed comprising the product of a reaction in bulk at elevated temperature in the molten state and in the presence of (1) a peroxide catalyst of (2) an elastomeric backbone polymer selected from the group consisting of (a) a copolymer rubber formed by copolymerization of ethylene and one or more mono-olefins containing 3–16 carbon atoms and (b) an interpolymer rubber formed by interoplymerization of ethylene, one or more C_3–C_{16} mono-olefins, and a polyene and (3) a free radical polymerizable ethylenically unsaturated monomer having an epoxy functionality, wherein said bulk reaction product has a gel content greater than 5 percent, an epoxy functionality within the range of 2.5–13.0 per 1000 carbon atoms and degree of graft of at least 2.5%.

5,008,343

PROCESS FOR THE PREPARATION OF POLYMERS BASED ON CONJUGATED DIENES AND OPTIONALLY MONOVINYLAROMATIC COMPOUNDS

Walter Hellermann, Dorsten; Christoph Herrmann, Marl; Hans-Bernd Fuchs, Marl; Karl-Heinz Nordsiek, Marl, and Jurgen Wolpers, Haltern, all of Fed. Rep. of Germany, assignors to Huls Aktiengsellschaft, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 190,640, May 4, 1988, abandoned. This application Feb. 20, 1990, Ser. No. 492,317

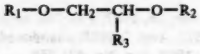
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1987, 3724870

Int. Cl.[5] C08F *255/02, 255/06;* **C08K** *3/06;* **B32B** *27/08*

U.S. Cl. 525—316 **14 Claims**

1. A process for preparing block-free conjugated diene polymers, comprising:

anionically polymerizing monomers consisting essentially of at least two compounds selected from the group consisting of 1,3-butadiene, isoprene and styrene in an inert organic solvent in the presence of an organolithium compound as a catalyst and a cocatalyst of a glycol dialkyl ether:



wherein R_3 is hydrogen, methyl or ethyl, R_1 and R_2 are alkyl groups of different numbers of carbon atoms selected from the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, iso-butyl, sec-butyl and t-butyl, and the total number of carbon atoms in the alkyl groups R_1 and R_2 ranges from 5 to 7.

5,008,344

TEMPORARY WET STRENGTH RESINS AND PAPER PRODUCTS CONTAINING SAME

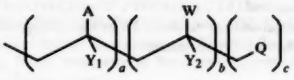
David W. Bjorkquist, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 5, 1988, Ser. No. 215,132

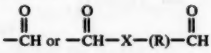
Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—328.2 **11 Claims**

1. A water soluble, temporary wet strength resin comprising a polymer characterized by the substantially complete absence of nucleophilic functionalities and having the formula:



wherein: A is



and X is —O—, —NH—, or —NCH_3—, and R is an unsubstituted aliphatic group; Y_1 and Y_2 are independently —H, —CH_3 or a halogen; W is a non-nucleophilic, aliphatic amide; Q is a cationic monomeric unit; the mole percent of a is from about 1% to about 70%, the mole percent of b is from about 10% to about 90%; and the mole percent of c is from about 1% to about 40%; said resin having an average molecular weight of between about 40,000 and about 400,000.

5,008,345

NO-POST-CURE METHOD OF CURING POLYACRYLATE POLYMERS

Fred R. Wolf, Avon Lake, Ohio, assignor to Zeon Chemical USA, Inc., Avon Lake, Ohio

Continuation of Ser. No. 227,396, Aug. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 101,883, Sep. 28, 1987, abandoned. This application May 18, 1990, Ser. No. 551,098

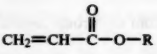
Int. Cl.[5] C08F *8/40*

U.S. Cl. 525—340 **16 Claims**

1. A no-post-cure method of curing polyacrylate rubber having halogen and carboxy cure sites, comprising:

mixing an effective amount of a curative with said polyacrylate rubber until a uniform vulcanizable composition results:

said acrylate rubber comprising(a) from about 40 percent to about 99.8 percent by weight of an acrylate of the formula:



wherein R is selected from the group consisting of an alkyl radical containing 1 to 18 carbon atoms, an alkoxyalkyl, an alkylthioalkyl, and a cyanoalkyl radical containing 2 to 12 carbon atoms; (b) from about 0.1 percent to about 30 percent by weight of a halogen-containing monomer selected from the group consisting of halogen-containing vinylene hydrocarbons and halogen-containing vinyl monomers having the halogen group at least two carbon atoms removed from an oxygen group; (c) from about 0.1 percent to about 20 percent by weight of a carboxyl-containing monomer; and (d) up to about 35 percent by weight of a copolymerizable monomer containing a terminal vinylidene group;

said curative comprising a metallic stearate and a quaternary salt selected from the class consisting of an ammonium quaternary halogen salt, an ammonium quaternary hydroxide salt, a phosphonium quaternary halogen salt, and a phosphonium quarternary hydroxide salt;

processing said composition and maintaining said composition below an activation temperature range prior to a curing step whereby said composition does not undergo any substantial amount of cure prior to said curing step, said activation temperature range being form about 75° C. to about 85° C.,; and

heating during said curing step said composition to above an activation temperature range which causes said composition to substantially cure whereby no-post-curing is necessary and whereby said process permits large scale commercial production.

5,008,346

GRAFT COPOLYMERS OF POLY(P-PHENYLENE BENZBISIMIDAZOLE)

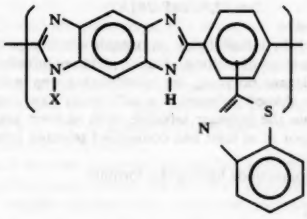
Robert C. Evers, Dayton; Thuy D. Dang, Springfield, both of Ohio, and D. Roger Moore, Clute, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 28, 1989, Ser. No. 345,251

Int. Cl.[5] C08L *79/04*

U.S. Cl. 525—426 **3 Claims**

1. A fusible, rod-like, graft copolymer having repeating units of the formula:



wherein X is (—CH_2CH_2CONH—)m or (—CH_2—CH(CH-3)—O—)n. wherein m has an average value of 5.0 to 35.0 and n has an average value of 1.0 to 30.0.

5,008,347

POLYALKYLOXAZOLINE-POLYCARBONATE-POLYALKYLOXAZOLINE TRIBLOCK COPOLYMER COMPATIBILIZER FOR POLYCARBONATE/POLYAMIDE BLENDS

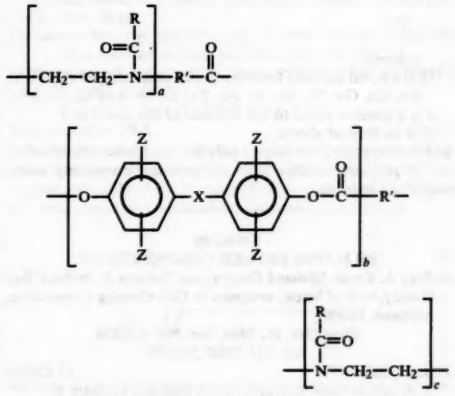
Bruce P. Thill, and Bruce A. King, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 264,920, Oct. 31, 1988, Pat. No. 4,954,579. This application Jun. 18, 1990, Ser. No. 540,971

Int. Cl.[5] C08L *69/00, 77/00;* C08G *64/18*

U.S. Cl. 525—433 **20 Claims**

1. A triblock copolymer of the formula:



wherein X is a divalent C_1–C_{15} hydrocarbon radical, a single bond, —O—, —S—, —S_2—, —SO—, —SO_2—, or —CO—, R is a monovalent C_1–C_4 alkyl radical, R' is a divalent C_7–C_{19}

alkyl radical, each Z is independently hydrogen, a halo radical, or a C_1–C_4 alkyl radical, b is a number greater than 0 equal to the number of repeated carbonate units in the polycarbonate block segment of the triblock copolymer, and a and c are each independently numbers greater than 0 equal to the numbers of repeated alkyloxazoline units in the polyalkyloxazoline block segments of the triblock copolymer.

5,008,348

INFUSIBILIZATION OF ORGANIC SILAZANE POLYMERS

Yoshihumi Takeda; Minoru Takamizawa, and Akira Hayashida, all of Joetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1989, Ser. No. 371,716

Claims priority, application Japan, Jun. 30, 1988, 63-163592; Jul. 26, 1988, 63-186324

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—474 **20 Claims**

1. A method for infusibilizing an organic silazane polymer, comprising the steps of melting, shaping and then infusibilizing the organic silazane polymer, the infusibilizing step including contacting the shaped polymer at a sufficiently low temperature to maintain the polymer infusible with an inert gas containing the vapor of at least one compound selected from the group consisting of:

(1) silicon compounds having the formula

$$RaSiX_{4-a}$$

wherein
R is a radical selected from the group consisting of hydrogen, lower alkyl, alkenyl, and aryl radicals;
X is a chlorine, bromine or iodine atom, and
a has a value of from 0 to 2, and when a is equal to 2, R may be the same or different;

(2) boron compounds having the formula

$$BX_3$$

wherein X is as defined above;

(3) phosphorus compounds having the formula

$$PX_b$$

wherein
X is as defined above, and
b is equal to 3 or 5; and

(4) metal compounds having the formula

$$MX_c$$

wherein
M is a metal selected from the group consisting of Al, Ti, V, Fe, Ga, Ge, Zr, Nb, Sn, Sb, Te, Ta, W, and Bi,
c is a number equal to the valence of the metal and
X is as defined above,

and then exposing the shaped polymer to enhance the infusibility of polymer articles with an inert gas containing water vapors or ammonia.

5,008,349

SILICONE PRIMER COMPOSITIONS

Jeffrey A. Kosal, Midland County, and Terence J. Swihart, Bay County, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 26, 1989, Ser. No. 426,835

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—477 **47 Claims**

1. A composition comprising the reaction product of:

(A) a resinous copolymeric siloxane consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units wherein the ratio of $R_3SiO_{\frac{1}{2}}$ units to $SiO_{4/2}$ units is 0.4:1 to 1.2:1 and each R independently denotes a monovalent hydrocarbon radical, said siloxane resin having residual hydroxyl functionality thereon; and

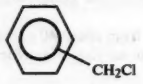
(B) an organosilane selected from the group consisting of those having the formulas

$$(X)_{3-a}\underset{\displaystyle R''_a}{\overset{|}{SiR'G}} \quad \text{and} \quad (X)_3SiR'G$$

wherein X is selected from the group consisting of an alkoxy group having 1 to 3 carbon atoms, an acyloxy group having 2 to 4 carbon atoms and a halide radical, R' is a divalent hydrocarbon group having 2 to 8 carbon atoms, R'' is selected from the group consisting of an alkyl radical having 1 to 12 carbon atoms and a phenyl radical, a is 1 or 2 and G is selected from the group consisting of (i) an acryl group selected from the group consisting of

$$-OC(O)\underset{\displaystyle A}{\overset{|}{C}}=CH_2 \quad \text{and} \quad -NC(O)\underset{\displaystyle A}{\overset{|}{C}}=\underset{\displaystyle A}{\overset{|}{C}}H_2$$

in which A is independently selected from the group consisting of hydrogen and a methyl radical,
(ii) a glycidoxy group,
(iii) an aromatic group of the formula



(iv) an anilino group and
(v) an amine group selected from the group consisting of

$$-NHQ \text{ and } -NQ_2$$

wherein Q is independently selected from the group consisting of

$$-CH_2COOR''',$$

$$-CH_2CH_2COOR''',$$

$$-\underset{\displaystyle CH_2COOR'''}{\overset{|}{CH}}COOR''',$$

$$-CH_2\underset{\displaystyle CH_2COOR'''}{\overset{|}{CH}}COOR'''$$

and

$$-CH_2CH_2N(CH_2CH_2COOR''')_2$$

in which R''' is an alkyl radical having 1 to 3 carbon atoms, the ratio of said silane (B) to said siloxane resin (A) being such as to provide from about 0.1 to about 3 equivalents of X for each equivalent of hydroxyl of said component (A).

5,008,350
GLYCIDYL ETHERS OF PHENOLIC COMPOUNDS AND PROCESS FOR PRODUCING THE SAME

Noriaki Saito; Shuichi Kanagawa, and Hideshi Sakamoto, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

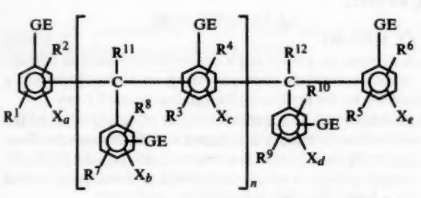
Filed Dec. 12, 1988, Ser. No. 282,569

Claims priority, application Japan, Dec. 16, 1987, 62-319289; Dec. 26, 1987, 62-331287

Int. Cl.[5] C08G 59/32

U.S. Cl. 525—507 **3 Claims**

1. A glycidyl ether of the formula (I):



(I)

wherein each of R^1 through R^6 represents an alkyl group of from 1 to 6 carbon atoms; each of R^7 through R^{12} represents a hydrogen atom or an alkyl group of from 1 to 4 carbon atoms; X represents a chlorine or bromine atom; GE represents a glycidyl ether group; a, b, c, d, and e are 0 or 1; and n is the average number of from 0.5 to 5.

5,008,351
REACTING EPOXY RESIN AND SUBSTITUTED UREA OR BIURET WITH BLOCKED ISOCYANATE GROUP DICARBOXYLIC ANHYDRIDE COMPOUND PRODUCT

Willibald Paar, Graz, Austria, assignor to Vianova Kunstharz, A.G., Werndorf, Austria

Division of Ser. No. 195,290, May 18, 1988, Pat. No. 4,851,486. This application May 15, 1989, Ser. No. 351,477

Claims priority, application Austria, May 18, 1987, 1248/87

Int. Cl.[5] C08G 18/06, 59/14, 63/68

U.S. Cl. 525—528 **9 Claims**

1. Process for producing self-crosslinking paint binders based on amino-modified epoxy resin esters comprising reacting 5 to 100 mole-% of the epoxy groups of an epoxy resin having an epoxy equivalent weight of from 160 to 2000 with a carboxylic compound of the formula —

$$HOOC-R_1-CO-NR_2-CO-NH-R_3-/NCO/,$$

wherein

R_1 is a saturated or unsaturated aliphatic, cycloaliphatic, or aromatic hydrocarbon radical,

R_2 is an aliphatic hydrocarbon radical,

R_3 is an aliphatic, cycloaliphatic, or aromatic hydrocarbon radical, and

—/NCO/ is a blocked isocyanate group, or the group $-NR_2-CO-NH-R_3-/NCO/$ is a radical formed from a substituted urea or a substituted biuret carrying at least one blocked isocyanate, group,

and any remaining epoxy groups with primary and/or secondary amines, the weight ratios being chosen such that the final product does not contain free epoxy groups and has an amine value of at least 30 mg KOH/g.

5,008,352
SUBSTITUTED AROMATIC POLYMERS

Brian N. Hendy, Middlesborough, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Feb. 8, 1989, Ser. No. 307,563

Claims priority, application United Kingdom, Feb. 8, 1988, 8802796; Feb. 8, 1988, 8802797

Int. Cl.[5] C08G 75/23, 65/48

U.S. Cl. 525—534 **15 Claims**

1. An aryl-ether polymer having aromatic rings linked to neighbouring rings in its chain through O and/or a direct link, at least some of said aromatic rings carrying a nuclear substituent sulphonamide group $SO_2NR'R''$, where R' is an aliphatic unsubstituted or substituted hydrocarbon group and R'' is hydrogen or an unsubstituted or substituted aliphatic hydrocarbon group, said neighbouring rings being part of repeating units Ph X Ph, where Ph is paraphenylene and X is SO_2 and/or CO, and being present in a molar proportion at least equal to that of said aromatic rings, said aryl-ether polymer being derived from a corresponding polymer carrying a plurality of groups SO_2Z, where Z is halogen, and possibly also groups SO_2OM, where M is 1/m of a cation of valency m, and being characterized in that said aryl-ether polymer contains, by moles, 0 to 10% of groups SO_2OM, based on the total groups SO_2OM and $SO_2NR'R''$.

13. A process of producing purified water which comprises contacting water containing dissolved impurity with one side of a cationic sulphonamide substituted polymer according to claim 1 applying to the impurity-containing water a hydrostatic pressure in excess of the osmotic pressure of that solution, and recovering purified water from the other side of that membrane.

15. A membrane comprising at least one polymer according to any one of claims 1 to 6 suitable for separation technologies, selected from the group consisting of ion-exchange, reverse osmosis and ultrafiltration.

5,008,353
ORGANIC PEROXIDE HAVING A POLYMERIZATION-REGULATING ABILITY

Takeshi Komai, Chita; Kazuo Matsuyama, Gamagori, and Isao Honma, Chita, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Japan

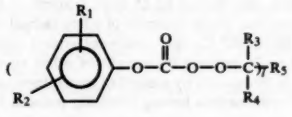
Division of Ser. No. 895,995, Aug. 13, 1986, Pat. No. 4,929,747. This application Nov. 14, 1988, Ser. No. 270,214

Claims priority, application Japan, Aug. 21, 1985, 60-181623; Aug. 21, 1985, 60-181624

Int. Cl.[5] C08F 4/34, 4/36

U.S. Cl. 526—230.5 **11 Claims**

1. A process for polymerizing unsaturated monomers, which comprises initiating and regulating the polymerization with an organic peroxide of the formula (I) in an amount of 0.00005-14 0.2 mole based on 1 mole of the unsaturated monomer



(I)

wherein R_1 and R_2 represent hydrogen atoms; R_3 and R_4 represent the same or different lower alkyl groups having 1–4 carbon atoms; and R_5 represents an alkyl group having 2–12 carbon atoms in the case of l=1, or a $-CH_2-_m$ group (wherein m is an integer of 2–4) in the case of l=2.

5,008,354

CONTACT LENS

Takeyuki Sawamoto, Tokyo; Masashi Nomura, Kodama, and Niro Tarumi, Akishima, all of Japan, assignors to HOYA Corporation, Tokyo, Japan

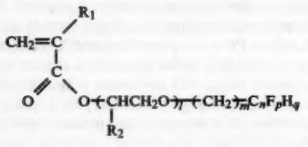
Filed Apr. 26, 1989, Ser. No. 343,389

Claims priority, application Japan, Apr. 30, 1988, 63-108423

Int. Cl.[5] C08F *18/20;* G02C *7/04*

U.S. Cl. 526—246 15 Claims

1. A contact lens having no water absorbability consisting of a polymer comprising, as an essential component, at least one fluorine-containing monomer represented by the general formula



(I)

wherein R_1 and R_2 are independently H or CH_3 and may be the same or different, l is an integer of 1–5, m is an integer of 1–2, n is an integer of 4–10, p is an integer of 8 or more, q is an integer of 0 or more, and $p+q=2n+1$.

5,008,355

SLURRY POLYMERIZATION OF MALEIC ANHYDRIDE AND ACRYLIC ACID IN A COSOLVENT SYSTEM OF ETHYL ACETATE AND CYCLOHEXANE

Mohammed Tazi, Wayne, and Krystyna Plochocka, Scotch Plains, both of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Filed Mar. 29, 1990, Ser. No. 501,059

Int. Cl.[5] C08F *34/02*

U.S. Cl. 526—271 10 Claims

1. A slurry polymerization process for preparing uncrosslinked copolymers of maleic anhydride and acrylic acid or methacrylic acid, optionally including a C_1–C_4 alkyl vinyl ether, having a predetermined weight average molecular weight of about 10,000 to one million which comprises:

copolymerizing about 20 to 60 mole percent of maleic anhydride, about 40 to 80 mole percent of acrylic acid or methacrylic acid, and from 0 to 25 mole percent of a C_1–C_4 alkyl vinyl ether, in the presence of a free radical initiator, at about 60° to 80° C., in a cosolvent system comprising about 10 to 75 percent by weight of ethyl acetate and about 25 to 90 percent by weight of an aliphatic or cycloaliphatic hydrocarbon having a boiling point at least 10° C. above the reaction temperature, without the presence of a protective colloid, to produce a pumpable slurry of said copolymer in said cosolvent system,

pumping the slurry from the reactor, and

recovering the copolymer therefrom as a uniform, fine powder having substantially no residual maleic anhydride.

5,008,356

CYCLO-OLEFINIC RANDOM COPOLYMER, OLEFINIC RANDOM COPOLYMER, AND PROCESS FOR PRODUCING CYCLO-OLEFINIC RANDOM COPOLYMERS

Naoshi Ishimaru, Yamaguchi; Toshiyuki Tsutsui, Ohtake; Akinori Toyota, and Norio Kashiwa, both of Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 162,200, Feb. 29, 1988. This application May 31, 1989, Ser. No. 359,131

Claims priority, application Japan, Mar. 2, 1987, 62-45152; Dec. 11, 1987, 62-312112; Dec. 15, 1987, 62-315206; Feb. 1, 1988, 63-19622

Int. Cl.[5] C08F *10/00*

U.S. Cl. 526—281 9 Claims

1. A process for producing a cyclo-olefinic random copolymer, which comprises copolymerizing an alpha-olefin and a cyclo-olefin in the presence of a catalyst formed from

(A) a compound of a transition metal of Group IVB of the periodic table having as a ligand a multidentate coordination compound in which at least two conjugated cycloalkadienyl groups or substituted products thereof are bonded via a lower alkylene group, and

(B) an aluminoxane.

5,008,357

RESIN FOR MAGNETIC RECORDING MEDIA FROM VINYL CHLORIDE POLYMER WITH QUATERNARY GROUPS

Takeshi Nakachi; Akio Hata, both of Shinnanyo, and Yoshihisa Watanabe, Uji, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 236,350, Aug. 22, 1988, Pat. No. 4,861,683, which is a continuation of Ser. No. 30,457, Mar. 25, 1987, abandoned. This application Jun. 26, 1989, Ser. No. 371,590

Int. Cl.[5] C08F *220/34*

U.S. Cl. 526—292.2 1 Claim

1. A resin used for magnetic recording media, comprising a vinyl chloride copolymer containing vinyl monomers with hydroxyl groups and methacryloyloxyethyltrimethylammonium chloride as component units, wherein

the content of the vinyl chloride is in the range of 60 to 95% by weight,

the content of the vinyl monomers with hydroxyl groups is in the range of 1 to 30% by weight,

the content of the methacryloyloxyethyltrimethylammonium chloride is in the range of 0.05 to 5% by weight in the vinyl chloride copolymer, and

the average degree of polymerization in said vinyl chloride copolymer is in the range of about 150 to 600.

5,008,358

POLYMER COMPOSITIONS

Larry Anderson, Battersea; Gregory N. Batts; Malcolm D. Purbrick, both of Bushey; Clare E. Scriven, Harrow, and Stephen A. Jones, Barnet, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/GB90/00014, § 371 Date Sep. 4, 1990, § 102(e) Date Sep. 4, 1990, PCT Pub. No. WO90/07528, PCT Pub. Date Jul. 12, 1990

PCT Filed Jan. 4, 1990, Ser. No. 571,617

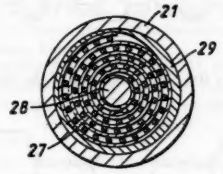
Claims priority, application United Kingdom, Jan. 6, 1989, 8900221

Int. Cl.[5] C08F *12/16, 22/00, 20/18, 222/18*

U.S. Cl. 526—292.3 5 Claims

5. A method of making a hydrophilic crosslinkable copolymer which method comprises forming a composition comprising an ester of an ethylenically unsaturated carboxylic acid wherein the ester group contains a labile primary hydroxyl

group, a halohydroxyalkyl ester of an ethylenically unsaturated carboxylic acid and a polymerisation initiator and subjecting the composition to conditions which generate free radicals from the polymerisation initiator.



5,008,359

ISOCYANATE MODIFIED CELLULOSE PRODUCTS AND METHOD FOR THEIR MANUFACTURE

Frank R. Hunter, Bellevue, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Nov. 25, 1988, Ser. No. 275,824

Int. Cl.[5] C08H *5/04*; C08G *18/00*; B32B *21/06, 23/04*

U.S. Cl. 527—103 **29 Claims**

1. A method for making a modified cellulose product which comprises:

impregnating a cellulosic material with an amount of essentially uncatalyzed polyisocyanate within a range of about 8 to 20% by weight of polyisocyanate to cellulosic material; and

heating the polyisocyanate-impregnated cellulosic material at a temperature within a range of about 105°–245° C. (221°–473° F.) for a time not exceeding about 5 minutes and at a pressure within a range of about 2700 to 8300 kPa (390 to 1200 psi) so as to cure the polyisocyanate.

5,008,360

ORGANOSILICON MATERIALS

John K. Bard, and Julia S. Burnier, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Oct. 16, 1989, Ser. No. 422,214

Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—25 **28 Claims**

1. A prepreg which comprises fiber reinforcment impregnated with the partial hydrosilation reaction product of:

(a) at least one polyene having at least two non-aromatic carbon-carbon double bonds highly reactive in hydrosilation, the carbon-carbon double bonds being either in an alpha, beta or gamma position on a linear carbon moiety, next to two bridgehead positions in a strained polycyclic aliphatic ring structure, or in a cyclobutene ring;

(b) dicyclopentadiene and, optionally, one or more other polycyclic polyene having at least two chemically distinguishable non-aromatic, non-conjugated carbon-carbon double bonds in its rings;

(c) at least one cyclic polysiloxane containing three or more ≡SiH groups;

wherein about 55 to about 75% of the ≡SiH groups of the at least one cyclic polysiloxane (c) are reacted and the prepreg is substantially tack-free.

5,008,361

CRYSTALLINE POLYIMIDESILOXANES

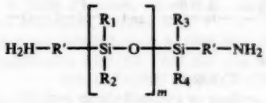
Chung J. Lee, Amherst, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Jan. 2, 1990, Ser. No. 459,498

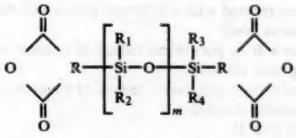
Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—26 **11 Claims**

1. A crystalline polyimidesiloxane comprising a reaction product of benzophenone dianhydride and an organic diamine selected from the group consisting of bis-4(4-aminophenoxy) phenyl sulfone, 2,2-bis-4[4-aminophenoxy phenyl]-propane, and mixtures thereof, and a siloxane monomer selected from the group consisting of siloxane diamines having the formula



and siloxane dianhydrides having the formula



wherein the benzophenone dianhydride and the organic diamine(s) form an oligomer within said polyimidesiloxane of 1 to 10 repeating units, where m is 1 to 10, R is a tri-radical, and R_1, R_2, R_3, and R_4 are independently selected from substituted or unsubstituted aliphatic mono-radical of 1 to 12 carbon atoms or substituted or unsubstituted aromatic mono-radical of 6 to 10 carbon atoms and each R′ is independently selected from substituted or unsubstituted aliphatic di-radical of 1 to 12 carbon atoms or substituted or unsubstituted aromatic di-radical of 6 to 10 carbon atoms.

5,008,362

BINDERS SOLUBLE IN AQUEOUS ALKALI AND CONTAINING SILANYL GROUPS IN THE SIDE CHAIN, PROCESS FOR PREPARING SAME AND ALSO PHOTOSENSITIVE MIXTURE CONTAINING THESE COMPOUNDS

Peter Wilharm, Wiesbaden; Gerhard Buhr, Koenigstein, and Juergen Fuchs, Floersheim-Wicker, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 3, 1989, Ser. No. 332,511

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1988, 3811242

Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—28 **23 Claims**

1. A silylated polymeric binder derived from a polymer bearing aliphatic or aromatic hydroxyl groups or both aliphatic and aromatic hydroxyl groups, at least a portion of which is modified by groups of the formulae I and II

$$[(A—B_n)_mC]—[(D_oE_p)BC]_u— \quad (I)$$

and

$$[(D_oE_p)BC]_v— \quad (II),$$

wherein

A denotes a silanyl group containing at least 2 silicon atoms in total linked to each other, but not more than 3 silicon atoms linked to each other in an unbranched chain of silicon atoms;

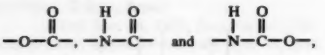
B denotes a bridging group having the formula IV:

$$—(b_1)_r—(X)—(b_2)_s— \quad (IV)$$

wherein

b_1 denotes a (C_1–C_4)alkylene of a group containing at least one C—C double bond and resulting from Diels-Alder reaction of an alkadienylene, with a dienophile;

X denotes a single bond, —O—, —S—, —SO_2—, —NH—, —NR^1—,



wherein

R^1 is a (C_1–C_3)alkyl;

b_2 denotes arylene or cycloalkylene; and

r, s each denotes 0 or 1, with the proviso that for the bridging group B the sum of the values of r and s is at least 1;

C denotes a group derived from a functional group which has been reacted with a hydroxyl group with formation of a covalent bond

D denotes a di- or polyvalent radical of a mono- or polyhydric aliphatic alcohol;

E denotes a di- or polyvalent radical of a mono- or polyhydric aromatic alcohol;

n denotes 0 or 1;

m denotes 1 or 2; and

o, p, u, and v each denote 0 or 1.

5,008,363

LOW TEMPERATURE ACTIVE ALIPHATIC AROMATIC POLYCARBODIIMIDES

Charles B. Mallon, and Howard Chu, both of Belle Mead, N.J., assignors to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Filed Mar. 23, 1990, Ser. No. 497,925

Int. Cl.[5] C08F *8/30*

U.S. Cl. 528—49 **20 Claims**

1. A method for preparing a mixed aliphatic/aromatic polycarbodiimide comprising:

(a) polymerizing a saturated aliphatic diisocyanate or a saturated cycloaliphatic diisocyanate or a mixture thereof, optionally containing a polyfunctional isocyanate, in the presence of a polycarbodiimide polymerization catalyst to form a polycarbodiimide intermediate having free isocyanate groups;

(b) reacting said polycarbodiimide intermediate with a monofunctional isocyanate-reactive compound or a mixture thereof in an amount insufficient to react with all of said free isocyanate groups, and

(c) further polymerizing said polycarbodiimide intermediate in the presence of an aromatic diisocyanate and said catalyst under polycarbodiimide-forming conditions until essentially all of the isocyanate groups are depleted.

5,008,364

THERMOPLASTIC MOLDING MATERIALS WHICH ARE STABLE AT HIGH TEMPERTURES AND HAVE IMPROVED MELT STABILITY

Peter Ittemann, Ludwigshafen; Georg N. Simon, Limburgerhof; Gerhard Heinz, Weisenheim; Hartmut Zeiner, Plankstadt; Hermann Buchert, Bad Duerkheim, and Joachim Seibring, Lambsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 20, 1988, Ser. No. 209,215

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1987, 3721337; Sep. 30, 1987, 3732931

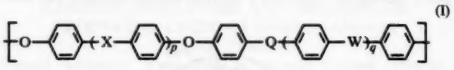
Int. Cl.[5] C08G *8/02, 75/20*

U.S. Cl. 528—172 **7 Claims**

1. A thermoplastic molding material which is stable at high temperatures and contains, an essential components,

(A) from 20 to 100% by weight of a polyaryl ether sulfone consisting of

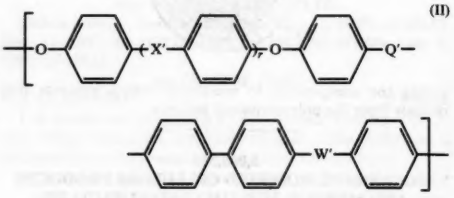
(A_1) from 0 to 100 mol % of units of the formula I



(I)

and

(A_2) from 0 to 100 mol % of units of the formula II

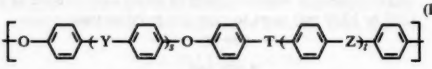


(II)

or their C_1–C_6-alkyl or alkoxy, aryl, chlorine or fluorine derivatives which are substituted in the nucleus, where X, X', Q, Q', W and W' independently of one another are each —SO_2—, —O—, —CO—, a chemical bond or —CR'R'— and in each case one or more of the substituents X, Q, W and X', Q, and W' are —SO_2—, R and R' are each hydrogen, C_1–C_6-alkyl or alkoxy, aryl or their fluorine or chlorine derivatives, and p, q and r are each 0 or 1, and furthermore

(B) from 0 to 80% by weight of a polyaryl ether ketone consisting of

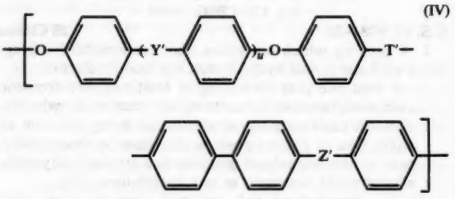
(B_1) from 0 to 100 mol % of units of the formula III



(III)

and

(B_2) from 0 to 100 mol % of units of the formula



(IV)

or their C_1–C_6-alkyl, C_1–C_6-alkoxy, phenyl, chlorine or fluorine derivatives which are substituted in the nucleus, where Y, Y', T, T', Z and Z' are each —CO—, CR''R'''—, a chemical bond or —O— and one or more of the substituents Y, T, and Z or Y', T' and Z' are —CO—, R'' and R''' may have the same meanings as R and R', and s, t and u are each 0 or 1, and

(C) from 0 to 90% by weight of fibrous or particulate fillers or a mixture of these,

wherein the said molding material contains not more than 100 ppm, based on total polymer and calculated as alkali metal, of an alkali metal salt as obtained by polycondensation of the respective precursor monomers in an aprotic polar solvent in the presence of an alkali metal carbonate, followed by filtration over a pressure filter and precipitation in water and extraction of the precipitated polycondensation product forming a powder with water until a residual alkali metal content of less than 100 ppm is obtained.

5,008,365

PROCESS FOR THE MANUFACTURE OF UREA-FORMALDEHYDE RESINS CONTAINING MELAMINE

Bernard Druet, Choisy Aubac, and Gerald Rochet, Fontaines Chaaly, both of France, assignors to Norsolor (Orkem Group), Paris LaDefense, France

Continuation of Ser. No. 289,274, Dec. 23, 1988, abandoned. This application Feb. 8, 1990, Ser. No. 477,144
Claims priority, application France, Dec. 23, 1987, 87 17997
Int. Cl.[5] C08G *12/32*
U.S. Cl. 528—230 19 Claims

1. A multistage process for the manufacture of urea-melamine-formaldehyde resins containing not more than 10% of melamine and exhibiting a final F/NH_2 molar ratio of between 0.5 and 0.575, the NH_2 groups being the sum total of the NH_2 groups of urea and of melamine which are used, comprising adding the melamine in a first stage of condensation of urea and of a source of formaldehyde, the condensation with melamine being conducted at an acidic pH, under heat, the quantity of urea and formaldehyde used being such that the F/NH_2 molar ratio at this stage is not more than 1.5, the molar equivalents of the NH_2 groups being the sum total of the NH_2 groups of urea and of melamine used until the viscosity of the solution is at least 345 mPa s at 40° C., and introducing additional urea to resultant hot condensation product in a second stage, the quantity of urea an formaldehyde used being such that the F/NH_2 molar ratio at this stage is not more than 1.5, the molar equivalents of the NH_2 groups being the sum total of the NH_2 groups of urea and of melamine used, and introducing additional urea to resultant condensation product in a second stage at an acidic pH to effect further condensation so as to obtain said final F/NH_2 molar ratio.

5,008,366

PROCESS FOR PRODUCING ADHESIVES FROM POLYETHYLENE TEREPHTHALATE

Oscar M. Bathe, Woodridge, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Apr. 25, 1990, Ser. No. 514,428
Int. Cl.[5] C08G *63/46*
U.S. Cl. 528—272 10 Claims

1. A process for the preparation of high tack adhesive compositions, as hot melt adhesives for paper, aluminum and polyethylene substrates and as pressure-sensitive adhesives for paper and aluminum substrates, comprising the reaction product of a trimellitic acid polyester ether and a polyol of a molecular weight ranging from about 100 to about 650, and polyethylene terephthalate, which process comprises:

(a) preparing a trimellitic acid polyester ether of at least 500 molecular weight and less than about 1500 molecular weight and an acid number of up to 10 by reacting trimellitic anhydride or trimellitic acid with a polyethylene glycol of molecular weight from about 100 to about 650, wherein mole ratio of said trimellitic anhydride or trimellitic acid to said polyethylene glycol is at least 1:3, in the presence of an esterification catalyst at a temperature within the range of from about 380° F. to about 500° F. at a pressure ranging from about 1 to about 30 atmospheres;

(b) reacting in situ said trimellitic acid polyester ether with polyethylene terephthalate at a temperature within the range of from about 450° F. to about 480° F., a pressure from about 1 to about 30 atmospheres, wherein mole ratio of said trimellitic acid polyester ether to said polyethylene terephthalate is in the range of from about 1:1 to about 1:3, to prepare a copolymer of trimellitic acid polyester ether and polyethylene terephthalate of a molecular weight within the range of from about 1000 to about 1200, a functionality of at least 3, and an acid number of from about 3 to about 10; and

(c) recovering said copolymers of trimellitic acid polyester ether and polyethylene terephthalate as a liquid at elevated temperature or as a solid at ambient temperature.

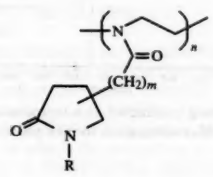
5,008,367

POLY(PYRROLIDONYL OXAZOLINE)

Gary Dandreaux, Bloomfield; Robert B. Login, Oakland; John J. Merianos, Middletown; Paul Garelick, South Plainfield; Krystyna Plochocka, Scotch Plains; Max Negrin, Bloomfield, and Jenn S. Shih, Paramus, all of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Division of Ser. No. 349,362, May 8, 1989, Pat. No. 4,933,463.
This application Mar. 19, 1990, Ser. No. 495,078
Int. Cl.[5] C08G *69/14*
U.S. Cl. 528—326 3 Claims

1. A homopolymer having recurring units of the formula:



wherein n has a value of 10 to 50,000, where R is H or alkyl, and m is 0 to 4.

5,008,368

PREPARATION OF POLY(ARYLENE SULFIDE/SULFONE) POLYMER WITH ADDITION OF WATER AFTER POLYMERIZATION IS INITIATED

Afif M. Nesheiwat, Chatham, N.J., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 3, 1989, Ser. No. 389,020
Int. Cl.[5] C08G *75/14*
U.S. Cl. 528—388 15 Claims

1. A method of producing a poly(arylene sulfide/sulfone) polymer which comprises:

(a) contacting reactants comprising an alkali metal sulfide, a dihalogenated aromatic sulfone, a polar organic compound, at least one base and an alkali metal carboxylate under suitable conditions to initiate a polymerization reaction,

(b) thereafter adding an amount of water while maintaining polymerization conditions,

(c) terminating the polymerization reaction, and

(d) recovering the poly(arylene sulfide/sulfone) polymer.

5,008,369

PREPARATION OF POLYSULFONES

Douglas R. Robello, Webster, and Abraham Ulman, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

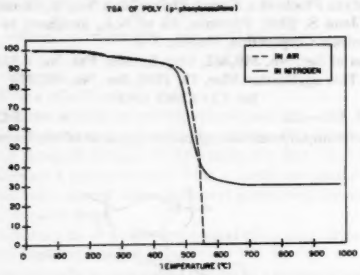
Filed Nov. 1, 1989, Ser. No. 430,039
Int. Cl.[5] C08G *75/14, 75/18, 75/20*
U.S. Cl. 528—391 11 Claims

1. A process for the preparation of a polysulfone, said process comprising the self-condensation of a reactant in the presence of an initiator for the self-condensation,

said reactant having a leaving group and a sulfinate group conjugated by an aromatic group Ar, to which said leaving group and aromatic group are substituted, said sulfinate group having the formula $-SO_2M^+$, wherein M is an alkali metal,

said initiator having a bridging group, selected from the carbonyl group or the sulfonyl group, bonded to two

aromatic groups, each of which has a halogen in a position ortho or para to said bridging group,



said process being conducted at a temperature sufficient to cause said self-condensation to take place.

5,008,370

POLY(ARYLENE THIOETHER-KETONES) IMPROVED IN MELT STABILITY AND PREPARATION PROCESS THEREOF

Ken Kashiwadate; Yoshikatsu Satake, both of Iwaki; Takashi Kaneko, Shiroyama; Masahiro Tada, Matsudo, and Takayuki Katto, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo K.K., Japan

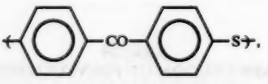
Filed Nov. 3, 1989, Ser. No. 431,118

Claims priority, application Japan, Nov. 11, 1988, 63-283553

Int. Cl.[5] C08F *283/00*

U.S. Cl. 528—481 **5 Claims**

1. A process for the preparation of a poly(arylene thioether-ketone) improved in melt stability, which comprises subjecting a poly(arylene thioetherketone) to a heat treatment for $5-5\times10^3$ minutes in a powdery state and a temperature range of 200°–350° C., said poly(arylene thioether-ketone) having predominant recurring units of the formula



wherein the —CO— and —S— are in the para position to each other, and having the following physical properties (a)–(c):

(a) melting point, Tm being 310°–380° C.;

(b) melt crystallization temperature, Tmc (420° C./10 min) being at least 210° C., and residual melt crystallization enthalpy, ΔHmc (420° C./10 min) being at least 10 J/g, wherein Tmc (420° C./10 min) and ΔHmc (420° C./10 min) are determined by a differential scanning calorimeter at a cooling rate of 10° C./min after the poly(arylene thioether-ketone) is held at 50° C. for 5 minutes in an inert gas atmosphere, heated to 420° C. at a rate of 75° C./min and then held for 10 minutes at 420° C.: and

(c) reduced viscosity being 0.2–2.0 dl/g as determined by viscosity measurement at 25° C. and a polymer concentration of 0.5 g/dl in 98 percent by weight sulfuric acid.

5,008,371

BIOLOGICALLY ACTIVE POLYPEPTIDE AND USE THEREOF

Shunji Natori, Ibaragi, Japan, assignor to Sanwa Kagaku Kenkyusho Co., Ltd., Aichi, Japan

Filed Jan. 22, 1988, Ser. No. 146,892

Claims priority, application Japan, Jan. 23, 1987, 62-14807

Int. Cl.[5] A61K *37/02*; C12P *21/02*; A01N *37/18*

U.S. Cl. 530—324 **2 Claims**

1. A purified antiviral active polypeptide having an amino acid sequence shown by the formula of

H—Ala—Thr—Cys—Asp—Leu—Leu—Ser—Gly—

—Thr—Gly—Ile—Asn—His—Ser—Ala—Cys—Ala—

—Ala—His—Cys—Leu—Leu—Arg—Gly—Asn—Arg—

—Gly—Gly—Tyr—Cys—Asn—Gly—Lys—Ala—Val—

—Cys—Val—Cys—Arg—Asn.

5,008,372

DEBLOCKING AMINO TERMINAL N-ACETYL SERINE AND N-ACETYL THREONINE RESIDUES IN PEPTIDES AND PROTEINS TO ALLOW SEQUENCING

Daniel Wellner, New York, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Feb. 12, 1990, Ser. No. 478,917

Int. Cl.[5] C07K *3/08, 15/00*; G01N *33/68*

U.S. Cl. 530—345 **6 Claims**

1. A method for deblocking amino terminal N-acetyl serine and N-acetyl threonine residues in proteins and peptides to allow sequencing, said method comprising the steps of:

(a) reacting the protein or peptide having N-terminal acetyl serine or N-terminal acetyl threonine residue with anhydrous trifluoroacetic acid for 1 to 15 minutes at 30 to 60° C.,

(b) removing the remaining trifluoroacetic acid,

(c) maintaining the reaction mixture from which trifluoroacetic acid has been removed at 30 to 100° C. for 60 minutes to 5 days.

5,008,373

FUSION PROTEINS AND PARTICLES

Alan J. Kingsman; Susan M. Kingsman, both of Islip; Sally E. Adams, Kidlington; Elizabeth J. C. Mellor, Oxford, and Michael H. Malim, Upleadon, all of United Kingdom, assignors to Oxford Gene Systems Limited, Oxford, England

Continuation-in-part of Ser. No. 36,807, Apr. 10, 1987. This application Oct. 26, 1987, Ser. No. 112,082

Claims priority, application United Kingdom, Nov. 1, 1986, 8626148; Sep. 4, 1987, 8708531

The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.

Int. Cl.[5] C07K *3/00*; C02K *13/00, 15/00*; C12N *15/11*

U.S. Cl. 530—350 **5 Claims**

1. A fusion protein comprising a first and second amino acid sequence wherein the first amino acid sequence is encoded for by a yeast TYA gene sequence and the second amino acid sequence is encoded for by a gene sequence which encodes a biologically active amino acid sequence wherein the fusion protein self-assembles into particles containing a plurality of the same fusion protein and the particles exhibit biological activity of the second amino acid sequence.

5,008,374

IL-1α DERIVATIVES AND DRUGS

Satoru Nakai; Mayumi Kaneta; Yoshikazu Kikumoto, all of Tokushima; Yeong-Man Hong, Naruto; Kazuyoshi Kawai, Tokushima; Setsuko Takegata, Tokushima; Kiyoshi Ishii, Tokushima; Yasuo Yanagihara, Tokushima, and Yoshikatsu Hirai, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1987, Ser. No. 23,373

Claims priority, application Japan, Mar. 14, 1986, 61-57885; Jun. 3, 1986, 61-129759; Jun. 25, 1986, 61-148393; Jul. 8, 1986, 61-160250; Aug. 27, 1986, 61-200323

Int. Cl.[5] C07K *13/00;* A61K *37/00*

U.S. Cl. 530—351 8 Claims

1. An essentially pure polypeptide having an amino acid sequence of IL-1α represented by the formula (A) which is modified in that at least one of Asn at the 36 position and Cys at the 141 position is deficient or replaced by another amino acid:

formula (A)

5 10
Ser—Ala—Pro—Phe—Ser—Phe—Leu—Ser—Asn—Val—
15 20
Lys—Tyr—Asn—Phe—Met—Arg—Ile—Ile—Lys—Tyr—
25 30
Glu—Phe—Ile—Leu—Asn—Asp—Ala—Leu—Asn—Gln—
35 40
Ser—Ile—Ile—Arg—Ala—Asn—Asp—Gln—Tyr—Leu—
45 50
Thr—Ala—Ala—Ala—Leu—His—Asn—Leu—Asp—Glu—
55 60
Ala—Val—Lys—Phe—Asp—Met—Gly—Ala—Tyr—Lys—
65 70
Ser—Ser—Lys—Asp—Asp—Ala—Lys—Ile—Thr—Val—
75 80
Ile—Leu—Arg—Ile—Ser—Lys—Thr—Gln—Leu—Tyr—
85 90
Val—Thr—Ala—Gln—Asp—Glu—Asp—Gln—Pro—Val—
95 100
Leu—Leu—Lys—Glu—Met—Pro—Glu—Ile—Pro—Lys—
105 110
Thr—Ile—Thr—Gly—Ser—Glu—Thr—Asn—Leu—Leu—
115 120
Phe—Phe—Trp—Glu—Thr—His—Gly—Thr—Lys—Asn—
125 130
Tyr—Phe—Thr—Ser—Val—Ala—His—Pro—Asn—Leu—
135 140
Phe—Ile—Ala—Thr—Lys—Gln—Asp—Tyr—Trp—Val—
145 150
Cys—Leu—Ala—Gly—Gly—Pro—Pro—Ser—Ile—Thr—
155
Asp—Phe—Gln—Ile—Leu—Glu—Asn—Gln—Ala.

5,008,375

METHOD FOR A CONTINUOUS HYDROLYZING OF KERATINACEOUS MATERIALS

Peder Fosbol, Nybrovej; Henrik Ullum, Lykkesholm, and Birgitte Korremann, Abjergvej, all of Denmark, assignors to Atlas Industries A/S, Ballerup, Denmark

PCT No. PCT/DK89/00122, § 371 Date Jan. 29, 1990, § 102(e) Date Jan. 29, 1990, PCT Pub. No. WO89/11797, PCT Pub. Date Dec. 14, 1989

PCT Filed May 16, 1989, Ser. No. 460,150

Claims priority, application Denmark, Jun. 1, 1988, 2969/88

Int. Cl.[5] A23J *1/10;* C07K *3/10;* C08H *1/06*

U.S. Cl. 530—357 7 Claims

1. Method for the continuous hydrolyzing of keratinaceous material, which is heated under pressure for the duration of time it takes for the desired hydrolyzation to be achieved, characterized in that the material is introduced in batches at intervals into the one end of an elongated, pressure-tight hydrolyzing vessel through a pressure-proof inlet chute, in that the material is heated by the direct injection of steam into the hydrolyzing vessel while it is conveyed by means of pressure difference through the vessel towards a pressure-tight outlet chute which is opened at intervals for the emptying of a hydrolyzed batch of material, and in that the movement of the product mass through the hydrolyzing vessel takes place as a step-like plunger flow substantially in step with the inlet chute.

5,008,376

PROCESS FOR OBTAINING CONCENTRATES HAVING A HIGH α-LACTALBUMIN CONTENT FROM WHEY

Robin C. Bottomley, Bucks, England, assignor to Express Foods Group Limited, Middlesex, England

Filed Sep. 28, 1988, Ser. No. 250,403

Claims priority, application United Kingdom, Oct. 8, 1987, 8723651

Int. Cl.[5] C07K *3/26*

U.S. Cl. 530—366 9 Claims

1. A process for producing an α-lactalbumin-enhanced fraction from a liquid containing whey protein including α-lactalbumin and βlactoglobulin which comprises subjecting said liquid to ultrafiltraiton using a membrane having a molecular weight cut off of about 100,000 to form a permeate having a protein content in which the proportion of α-lactalbumin is enhanced relative to the proportion obtaining in the protein content of said liquid and further ultrafiltering said permeate using a membrane having a molecular weight cut off up to 10,000 to produce a concentrate having an enhanced αlactalbumin content.

5,008,377

PRODUCTION OF PROTEINS IN ACTIVE FORMS

Joseph J. Patroni, West Preston, and Malcolm R. Brandon, Ivanhoe, both of Australia, assignors to Bunge (Australia) Pty. Ltd., Melbourne, Australia

Filed Apr. 21, 1988, Ser. No. 184,342

Claims priority, application Australia, Apr. 21, 1987, PI 1508

The portion of the term of this patent subsequent to Jan. 10, 2006, has been disclaimed.

Int. Cl.[5] C07K *3/22, 3/28, 15/14, 15/26*

U.S. Cl. 530—416 6 Claims

1. A method for the preparation of a protein in a soluble and physiologically active form from which organic cations have been removed, comprising:

providing a source of protein, selected from the group consisting of growth hormones, interferons, immunogens and lymphokines, in a solubilized form, wherein the source of protein in the solubilized form is obtained by treating insoluble protein aggregates with an aqueous cationic surfactant, and wherein said cationic surfactant includes an organic cation selected from the group consisting of cetyl trimethylammonium cations, cetyl pyridinium cations, tetradecyl trimethylammonium cations, dodecyl trimethylammonium cations, mixed n-alkyl dimethyl benzyl ammonium cations, N, N-dimethyl-N-(2-(2-(4-(1,1,3,3,-tetramethyl butyl)phenoxyl)ethoxy)ethyl)benzenemethanaminium cations;

contacting said source of solubilized protein with a nuclear sulfonic acid cationic exchange resin, wherein the counter ion of said cationic exchange resin is an alkali metal; and

recovering the protein in a soluble and physiologically active form from which organic cations have been removed.

5,008,378

SUBMICRON LIGNIN DISPERSIONS

Mitchell S. Dimitri, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 255,444, Oct. 11, 1988, Pat. No. 4,957,557. This application Oct. 23, 1989, Ser. No. 408,846

Int. Cl.[5] C08H *5/02*

U.S. Cl. 530—501 4 Claims

1. A method of producing a lignin product comprised of lignin particles of submicron median particle diameter comprising the steps of preparing an aqueous solution containing

from about 12 to 18% lignin by weight, about 2 to 15 moles of ammonium hydroxide, about 4 to 12 moles of formaldehyde, and about 0.25 to 1.25 moles of a base selected from the group consisting of sodium hydroxide and potassium hydroxide, per mole of lignin present in the solution, heating the solution to a temperature of at least about 150° F. for sufficient time to cross link the lignin to precipitate lignin particles of submicron median particle diameter suspended in an aqueous colloidal suspension.

5,008,379

CHROMIUM COMPLEXES OF SULFO GROUP CONTAINING DISAZO COMPOUNDS HAVING A RESORCINOL BISCOUPLING COMPONENT RADICAL

Herbert Holliger, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

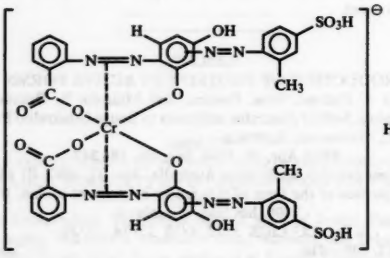
Continuation of Ser. No. 715,701, Mar. 25, 1985, abandoned, which is a continuation of Ser. No. 188,687, Sep. 19, 1980, abandoned. This application Oct. 29, 1987, Ser. No. 114,901

Claims priority, application Switzerland, Sep. 25, 1979, 8638/79

Int. Cl.[5] C09B *45/28, 33/04;* **D06P** *1/10, 3/00*

U.S. Cl. 534—684 **6 Claims**

1. A 1:2 chromium complex of the formula



or a salt thereof.

5,008,380

PROCESS FOR THE CONVERSION OF DAUNORUBICIN INTO DOXORUBICIN

Gaetano Palladino; Peter MacDonald, and Ettore Bigatti, all of Milan, Italy, assignors to Sicor Societa 'Italiana Corticosteroidi S.p.A., Milan, Italy

Filed Nov. 9, 1988, Ser. No. 269,199

Claims priority, application Italy, Oct. 11, 1988, 22260 A/88

Int. Cl.[5] C07H *15/24, 15/00*

U.S. Cl. 536—6.4 **1 Claim**

1. A process for the preparation of doxorubicin, which consists of reacting 14-bromo-daunorubicin 13, 13-diethylketal in aqueous medium, in the absence of organic solvents, with oxalic acid first at pH 1–2 and, after hydrolysis of the ketal group, at pH 2–6 to obtain doxorubicin 14-oxalate ester, hydrolyzing said ester and isolating doxorubicin from the reaction mixture.

5,008,381

SELECTIVE CLEAVAGE OF NARINGIN

Zdenek Kratky, New Milford, and John S. Tandy, Litchfield, both of Conn., assignors to Nestec S.A., Vevey, Switzerland

Continuation-in-part of Ser. No. 116,555, Nov. 3, 1987, abandoned. This application Feb. 23, 1990, Ser. No. 483,879

Int. Cl.[5] C07H *1/00, 1/08*

U.S. Cl. 536—8 **20 Claims**

1. A process for treating naringin for obtaining L-rhamnose and naringenin-7-O-glucoside comprising:

heating naringin in aqueous solution in agitated contact with an acidic catalyst in an amount sufficient for providing H^+ ions to naringin molecules for cleaving the O-glycosidic linkage of the naringin molecule which connects the naringin molecule L-rhamnose and naringenin-7-O-glucoside moieties while substantially avoiding cleaving the naringin molecule O-glucosidic linkage which connects the naringin molecule glucose and naringenin moieties and thereby forming a liquid reaction medium;

cooling the liquid reaction medium to form a liquid phase and a semi-solid phase;

separating the liquid phase from the semi-solid phase; and

isolating L-rhamnose from the liquid phase and isolating naringenin-7-O-glucoside from the semi-solid phase.

15. A process for treating naringin for obtaining L-rhamnose comprising:

heating naringin in aqueous solution to a temperature of from about 70° C. to 200° C. in agitated contact with an acid catalyst selected from a group consisting of a strong cationic exchange resin, hydrochloric acid having a molarity in the naringin solution which does not exceed about 0.1 M and trifluoroacetic acid having a molarity in the naringin solution which does not exceed about 0.2 M for from about 5 secs to 6 hrs for forming a reaction medium containing L-rhamnose and naringenin-7-O-glucoside;

cooling the liquid reaction medium to form a liquid phase and a semi-solid phase;

separating the liquid phase from the semi-solid phase; and

isolating L-rhamnose from the liquid phase.

5,008,382

CATIONIC AQUEOUS BITUMINOUS EMULSION-AGGREGATE SLURRIES PREPARATION

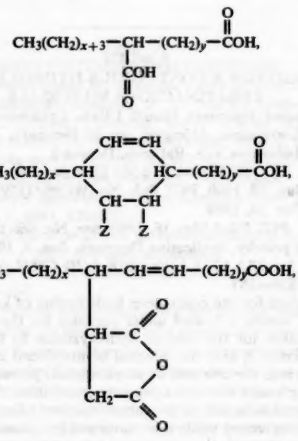
Peter Schilling, and Hans G. Schreuders, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 263,440, Oct. 27, 1988, Pat. No. 4,877,457, which is a continuation-in-part of Ser. No. 197,100, May 20, 1988, Pat. No. 4,810,299. This application Jul. 20, 1989, Ser. No. 370,052

Int. Cl.[5] C08L *95/00;* **C09D** *3/24;* **B01J** *13/00*

U.S. Cl. 536—11 **4 Claims**

1. A composition of matter obtained by (I) modifying a polyamine by reaction with a member of the group consisting of sulfonated fatty acids, resin acids (rosin) reacted with maleic anhydride or fumaric acid, and epoxidized esters of unsaturated fatty esters from the group consisting of tallates, oleates, linoleates, glycerides, and polycarboxylic acids and their anhydrides of the formulae



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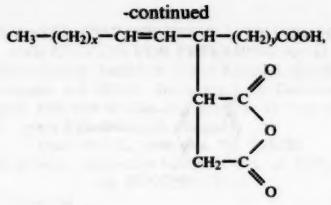
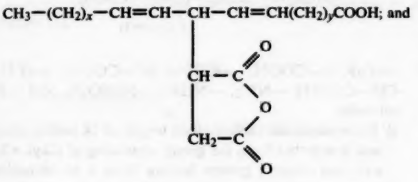
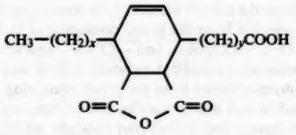






wherein x and y are integers from 3 to 9, x and y together equal 10–14, at least one Z is a carboxylic acid group and any remaining Z is hydrogen and (2) reacting the modified polyamine with a sugar-containing syrup.

5,008,383

SURFACE-ACTIVE AGENTS

John D. Bu'lock; James K. Sutherland, both of Manchester, and Michael J. Donnelly, Coventry, all of United Kingdom, assignors to 31 Research Exploitation Limited, London, England

PCT No. PCT/GB87/00243, § 371 Date Nov. 3, 1988, § 102(e) Date Nov. 3, 1988, PCT Pub. No. WO87/06236, PCT Pub. Date Oct. 22, 1987

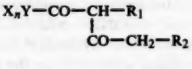
PCT Filed Apr. 9, 1987, Ser. No. 263,775

Claims priority, application United Kingdom, Apr. 12, 1986, 8608960

Int. Cl.[5] C07H *13/06, 15/12;* **C07C** *69/716;* **B01F** *17/00*

U.S. Cl. 536—4.1 **15 Claims**

1. A process for the preparation of a surface-active substance having the formula



(II)

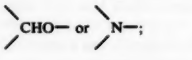
wherein;

each of R_1 and R_2, which may be the same or different, is an alkyl chain having from 6 to 20 carbon atoms;

X is a mono- or di-valent hydrophilic moiety;

n is 1 or 2; and,

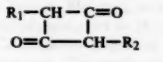
Y is $—CH_2O—$ or $—NH—$ or



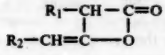
said process comprising reacting a compound of the formula

X_nYH

in which X,Y and n are as defined hereinabove, with a diketene of the formula III or IV;



(III)



(IV)

wherein R_1 and R_2 are as stated above, so that the group YH is acylated by the diketene, the acylation reaction being carried out in the presence of a non-acylable nitrogenous base as proton acceptor catalyst and in a polar aprotic solvent medium.

5,008,384

PROCESS FOR THE PRODUCTION OF O2,2'-ANHYDRO-1-(β-D-ARABINOFURANOSYL)THYMINE

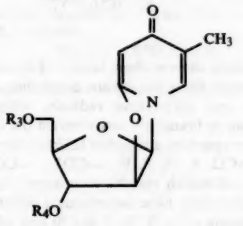
Charles W. Murtiashaw, North Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jul. 12, 1988, Ser. No. 217,906

Int. Cl.[5] C07H *19/09, 19/073*

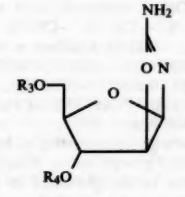
U.S. Cl. 536—23 **14 Claims**

1. A process for the production of a compound of the formula:



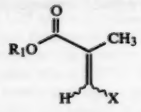
(I)

wherein R_3 is selected from the group consisting of hydrogen, triphenylmethyl or silyl which is substituted by three substituents selected from the group consisting of C_1–C_6 alkyl or phenyl and R_4 is selected from the group consisting of hydrogen, or silyl which is substituted by three substituents selected from the group consisting of C_1–C_6 alkyl or phenyl; comprising condensing a compound of the formula:



(II)

wherein R_3 is selected from the group consisting of hydrogen, triphenylmethyl, or silyl which is substituted by three substituents selected from the group consisting of C_1–C_6 alkyl or phenyl and R_4 is selected from the group consisting of hydrogen, or silyl which is substituted by three substituents selected from the group consisting of C_1–C_6 alkyl or phenyl with a compound of the formula:



(III)

wherein R_1 is selected from the group consisting of C_1–C_4 alkyl; X is selected from the group consisting of halogen, or OR_2, wherein R_2 is selected from the group consisting of H, C_1–C_4 alkyl or phenyl; in the presence of a reaction-inert solvent at a temperature of from about 0° to about 150° C.

5,008,385

CELLULOSE DERIVATIVES AND FIBERS AND MEMBRANES MADE THEREFROM

Michael Diamantoglou, Erlenbach, Fed. Rep. of Germany, assignor to Akzo N.V., Netherlands

Filed Jul. 15, 1988, Ser. No. 219,309

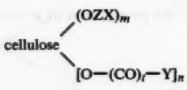
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1987, 3723897

The portion of the term of this patent subsequent to Jan. 1, 2008, has been disclaimed.

Int. Cl.[5] C08B *3/20, 11/20, 15/05;* **D01F** *2/02*

U.S. Cl. 536—56 **23 Claims**

1. A cellulose derivative which conforms to the following formula:



wherein

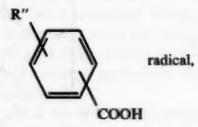
Z has a maximum carbon chain length of 18 carbon atoms and is selected from the group consisting of alkylene, alkenylene, and alkynylene radicals, which may be straight-chain or branched, and wherein the carbon chain may be interrupted by a member selected from the group consisting of O, S, N, P, Si, —CO—, —CONR—, and —COO—, and which may be substituted; cycloalkylene radicals, which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted, arylene, arylalkylene, arylalkenylene and arylalkynylene radicals, which may have heteroatoms selected from the group consisting of O, S, N, P and SI and which may be substituted; bisarylalkylene and bisarylene radicals, which may be substituted; condensed aromatic compound radicals, which may be substituted; and heterocyclic compound radicals, which may be substituted;

X is selected from the group consisting of —H, $—NR_2$ $—N^+R_3$, —COOH, a carboxylic acid salt, —COOR, $CONR_2$, —CO—R, —CS—R, —CSOH, a salt thereof, —CSOR, $CSNR_2$, $—CO_3H$, a sulfonic acid salt, $—SO_3R$, $—SO_2—R$, $—SO_2NR_2$, —SR, —SOR, $—SONR_2$, $—PO_3H_2$, a salt thereof, $—PO(OR)_2$, $PO_2H(NR_2)$, $—PO(NR_2)_2$, PO_2H_2, —POH(OR), —CN, $—NO_2$, —OR, halogen, and $—Si(OR)_3$;

R is selected from the group consisting of hydrogen; alkyl, alkynyl, and alkenyl groups having from 1 to 25 carbon atoms, which may be straight-chain or branched, and which may be substituted; cycloalkyl groups, which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted; and tolyl, benzyl, and phenyl groups, which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted;

t=0 or 1, such that when t=1,

Y is selected from the group consisting of a



radical,

$—(CH_2)_r—COOH$, $—(C_2H_3)(CH_2)_r—H$—COOH,

$—(C_2R''_4)—COOH$, $—CR''=CR''—COOH$, —(CH=CH—COOH); $—NR'_2$, —NHR', $—NHSO_2R'$, and —R'; wherein

R' has a maximum carbon chain length of 18 carbon atoms and is selected from the group consisting of alkyl, alkenyl, and alkynyl groups having from 1 to 36 carbon atoms which may be straight-chain or branched and wherein the carbon chain may be interrupted by a member selected from the group consisting of O, S, N, P, Si, —CO—, —CONR—, and —COO—, and which may be substituted; cycloalkyl radicals, which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted; aryl, arylakyl, arylalkenyl, and arylalkynyl radicals, which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted; bisarylalkyl and bisaryl radicals, which may be substituted; condensed aromatic compound radicals, which may be substituted; and heterocyclic compound radicals, which may be substituted;

R'' is selected from the group consisting of X and R';

and

r=1 to 20;

m=0 to 2.5;

n=0.01 to 2.95;

and when

t=0,

Y is a member selected from the group consisting of CS—R', CO—OR', CSNH—R', $CSNR'_2$, $SO_2—OR'$, $SO_2—R'$, $SO_2NR'_2$, SO—R', $SONR'_2$, PO_3H_2, $PO_2R'_2$, POR'_2, and $PO(OR')_2$;

and

R' has a maximum carbon chain length of 18 carbon atoms and is a member selected from the group consisting of hydrogen; alkyl, alkenyl, and alkynyl groups having from 1 to 36 carbon atoms, which may be straight-chain or branched, wherein the carbon chain may be interrupted by a member selected from the group consisting of O, S, N, P, Si, —CO—, —CONR— and —COO—, and which may be substituted; cycloalkyl radicals which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted; aryl, arylalkyl, arylalkenyl, and arylalkynyl radicals, which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted; bisarylalkyl and bisaryl radicals, which may be substituted; condensed aromatic compound radicals, which may be substituted; and heterocyclic compound radicals, which may be substituted;

wherein

m=0 to 2.5

n=0.01 to 2.95, and

wherein a degree of polymerization of said derivative is higher than 400, and which is synthesized from cellulose in a mixture of LiCl and one or more members selected from the group consisting of dimethyl acetamide and N-methylpyrrolidone.

5,008,386

METHYLATED CYCLODEXTRIN TYPE COMPOUNDS AND PROCESS FOR PREPARING SAME

Tibor Szabó; László Institóris; József Szejtli; Lajos Szente, all of Budapest, and Ildikó Jod/e,acu/a/ l, Debrecen, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT., Budapest, Hungary

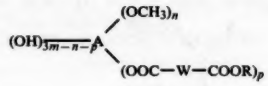
Filed Oct. 12, 1988, Ser. No. 256,857

Claims priority, application Hungary, Oct. 13, 1987, 4605/87

Int. Cl.[5] C08B *37/16*

U.S. Cl. 536—103 8 Claims

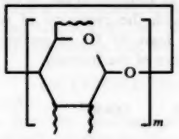
1. A partially methylated carboxyacyl-cyclodextrin of the formula (I),



(I)

wherein

A means the cyclodextrin skeleton of the formula (II)



(II)

containing the substituents in the position labelled by the wavy line;

W stands for an alkylene, alkenylene or arylene group;

R means hydrogen, alkyl, aryl or aralkyl;

m is 6, 7 or 8;

n is an integer from 1 to 2m; and

p is 2m−n+z, wherein the value of z is from 0 to 3 with the proviso that p does not equal 0 or a salt thereof.

5,008,387

PROCESS FOR PURIFYING SUCROSE FATTY ACID ESTERS

Shusaku Matsumoto, Kyoto; Yoshio Hatakawa, Higashiosaka, and Akihiko Nakajima, Kyoto, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Apr. 14, 1989, Ser. No. 338,012

Claims priority, application Japan, Apr. 18, 1988, 63-95243

Int. Cl.[5] C07H *1/00, 13/00;* C13F *3/00*

U.S. Cl. 536—119 19 Claims

10. A process for preparing a powder of a sucrose fatty acid ester which comprises subjecting an aqueous solution of a reaction mixture obtained by the reaction of sucrose and a fatty acid methyl ester in the presence of a catalyst to ultrafiltration, said reaction mixture containing the unreacted sucrose, the unreacted fatty acid methyl ester, the catalyst, a soap, a fatty acid and a volatile component, thereby separating the unreacted sucrose, a salt drived from the catalyst and the volatile component with water, bringing the remaining aqueous solution containing the sucrose fatty acid ester, the unreacted fatty acid methyl ester, the soap and the fatty acid into contact with a reverse osmosis membrane, thereby concentrating the aqueous solution, and spray drying the resulting concentrate.

5,008,388

PROCESS FOR PREPARATION OF A NEW HEMIN COMPLEX

Grels D. Ingberg, Ekenäs; Ritva L. A. Penttilä, Helsinki; Reino O. Tokola, Helsinki, and Raimo Tenhunen, Helsinki, all of Finland, assignors to Huhtamäki Oy, Turku, Finland

Continuation-in-part of Ser. No. 636,860, Aug. 1, 1984, abandoned. This application Dec. 2, 1985, Ser. No. 803,630

Claims priority, application Finland, Aug. 10, 1983, 832870

Int. Cl.[5] C07B *47/00;* C07K *3/00*

U.S. Cl. 540—145 7 Claims

1. A method for preparing a physiologically active, water-soluble complex of hemin and a material selected from the group consisting of L-arginine and L-lysine comprising vigorously stirring a mixture of said hemin and said material selected from the group consisting of L-arginine and L-lysine at room temperature for a period of 10 to 15 hours, the molar ratio of hemin to said material selected from the group consisting of L-arginine and L-lysine being from 1:1 to 1:4, the reaction taking place in a mixture of acetone and water which are in a ratio, on a volume basis, of from 300:10 to 300:25.

5,008,389

QUINOLINECARBOXYLIC ACID DERIVATIVES

Hirosato Kondo, Suita; Masahiro Taguchi, Hirakata; Yoshimasa Inoue, Osaka, and Fumio Sakamoto, Daito, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

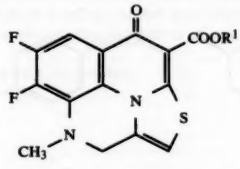
Division of Ser. No. 493,455, Mar. 14, 1990. This application Aug. 31, 1990, Ser. No. 575,633

Claims priority, application Japan, Mar. 15, 1989, 1-64617; Nov. 8, 1989, 1-290406

Int. Cl.[5] C07D *513/16*

U.S. Cl. 544—343 1 Claim

1. A quinolinecarboxylic acid derivative represented by the formula (II):



(II)

wherein R^1 is hydrogen atom of a lower alkyl.

5,008,390

COMPOUNDS FOR PREPARING 6-PHENYL-2,3-DIHYDROIMIDAZO[2,1-B]-THIAZOLES AND CORRESPONDING THIAZINES

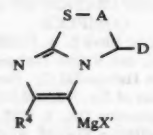
Paul E. Bender, Cherry Hill; Ivan Lantos, Blackwood, both of N.J.; Michael A. McGuire, Norristown, Pa.; Lendon N. Pridgen, Audubon, Pa., and Herbert B. Winicov, Blue Bell, Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Division of Ser. No. 856,246, Apr. 28, 1986, Pat. No. 4,803,279, which is a continuation-in-part of Ser. No. 737,137, May 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 808,595, Dec. 12, 1985, abandoned. This application Nov. 3, 1988, Ser. No. 266,728

Int. Cl.[5] C07D *513/04*

U.S. Cl. 546—199 5 Claims

1. A compound of the formula



in which:

A is a methylene group optionally substituted by methyl, ethyl or gem-dimethyl, or A is a 1,2-ethanediyl group optionally substituted by methyl, ethyl or gem-dimethyl on either or both carbon atoms of the 1,2-ethandiyl group;

D is H, methyl, ethyl, or gem-dimethyl;

R^4 is

(a) phenyl;

(b) monosubstituted phenyl wherein the substituent is halogen, C_1–C_3alkoxy, C_1–C_3 alkylthio, C_1–C_4 alkyl, CF_3, 2,2,2-triethoxy, prop-2-ene-1-oxy C_1–C_3 dialkylamino, pyrrolidino or piperidino, or $R^aC(O)N(CH_2)_nCH_3$ wherein R^a is H, CH_3, CH_2CH_3 and n is 0 to 2;

(c) disubstituted phenyl wherein the substituents are independently C_1–C_4 alkyl or C_1–C_3 alkoxy, or the substituents together form a methylene-dioxy group; or

(d) 3,4,5-trimethoxyphenyl; and X, is Cl, Br, or I.

5,008,391

ENANTIOSELECTIVE SYNTHESIS OF ANTIFOLATES

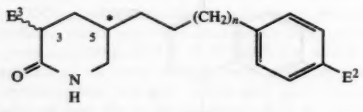
Charles J. Barnett, and Thomas M. Wilson, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 7, 1989, Ser. No. 377,021

Int. Cl.[5] C07D *211/76, 471/04;* **C07C** *255/17, 67/02*

U.S. Cl. 546—243 **4 Claims**

1. A compound of the formula



III

wherein

E^3 is cyano or C_1–C_3 alkoxycarbonyl;

E^2 is bromo, chloro, iodo, carboxy, C_4–C_6 tert-alkoxycarbonyl, cyano, C_1–C_3 alkylaminocarbonyl, di(C_1–C_3 alkyl-)aminocarbonyl, or [(tetra or penta)methylene]aminocarbonyl;

n is 0 or 1;

and the carbon marked * is in the R or S configuration.

5,008,392

PROCESS FOR THE PREPARATION OF PYRIDINE-2,3-DICARBOXYLIC ACID ESTERS

Josef Meier; Wolfgang Deinhammer, and Konrad Krageloh, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

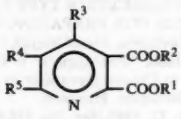
Filed Nov. 27, 1989, Ser. No. 441,367

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1988, 3840554

Int. Cl.[5] C07D *213/803*

U.S. Cl. 546—250 **5 Claims**

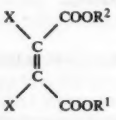
1. A process for the preparation of a pyridine-2, 3-dicarboxylic acid ester of the formula



(I)

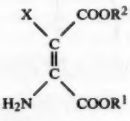
in which R^1 and R^2, which may be identical or different, are alkyl having 1 to 8 carbon atoms and R^3, R^4 and R^5, which may be identical or different, are hydrogen, alkyl having 1 to 8 carbon atoms or phenyl, comprising in a first process step,

(a) reacting a 2,3-dihalomaleic acid ester of the formula



(II)

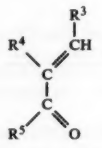
in which R^1 and R^2 are as defined above, and X is halogen with ammonia, or an ammonium salt, in the presence of an organic solvent with the exclusion of water, and at a temperature of at least 50° C., to produce a 2-amino-3-halomaleic acid ester of the formula



(III)

in which R^1, R^2 and X are as defined above, and

(b) reacting said 2-amino-3-halomaleic acid ester of the above formula (III), in a second process step, with an α,β-unsaturated aldehyde, or ketone, of the formula



(IV)

in which R^3, R^4 and R^5 are as defined above, in the presence of an acidic catalyst, an organic solvent and an acid-binding agent, at a temperature of at least 50° C. to produce the ester (I).

5,008,393

HERBICIDAL PYRIDINE SULFONAMIDES

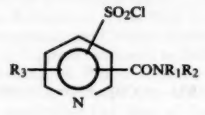
Mary A. Hanagan, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 408,223, Sep. 15, 1989, which is a division of Ser. No. 234,640, Aug. 22, 1988, which is a division of Ser. No. 88,259, Aug. 24, 1987, Pat. No. 4,786,734, which is a continuation-in-part of Ser. No. 84,532, Aug. 12, 1987, abandoned, which is a continuation-in-part of Ser. No. 936,105, Nov. 28, 1987, Pat. No. 4,789,393, which is a continuation-in-part of Ser. No. 837,392, Mar. 7, 1986, abandoned. This application Mar. 20, 1990, Ser. No. 497,061

Int. Cl.[5] C07D *213/71, 401/12*

U.S. Cl. 546—261 **3 Claims**

1. A compound selected from:



wherein

R_1 is H or C_{1-C3} alkyl;

R_2 is C_1–C_3 alkyl or C_1–C_2 alkoxy; or

R_1 and R_2 may be taken together to form $-(CH_2)_n-$, wherein n is 2, 3 or 4;

R_3 is H, Cl, F, Br, CH_3, CF_3, OCH_3, OCH_2CH_3, OCF_2H, SCH_3, SCH_2CH_3, SCF_2H, NHR_4 or NR_4R_5;

R_4 is CH_3 or CH_2CH_3; and

R_5 is CH_3, CH_2CH_3, OCH_3 or OCH_2CH_3.

5,008,394

PROCESS FOR PRODUCING EBSELEN IN HIGHLY PURE FORM

Bernd-Rainer Günther, Bergheim; Rainer Losch, Bonn, and Klaus Steiner, Pulheim, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie, GmbH, Koln, Fed. Rep. of Germany

Filed Aug. 9, 1989, Ser. No. 391,890

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1988, 3827093

Int. Cl.[5] C07D *293/12*

U.S. Cl. 548—121 **4 Claims**

1. Process for the production of 2-phenyl-1.2-benzisoselenazole-3(2H)-one (Ebselen) by reduction of metallic selenium by means of sodium formaldehyde sulfoxylate (Rongalit) in aqueous alkaline solution to yield sodium selenide, subjecting of the resulting sodium selenide to reaction with diazotized anthralinic acid in alkaline reaction medium to yield the sodium salt of o-diselenosalicylic acid, subjecting to reaction of the resulting the diseleno salicylic acid with an excess of thionylchloride to yield o-chloroselenobenzoic acid chloride, subjecting to reaction of the resulting chloroselenobenzoic acid chloride with aniline in an organic solvent, wherein

(a) the reduction of the metallic selenium in soda lye with Rongalit is effected at a temperature between 20° and 50° C. and the reaction mixture, after having added all reaction components, is kept at the applied reaction temperature for another 0.5 to 2 hours,

(b) the resulting alkaline solution of sodium selenide immediately thereafter is subjected to reaction with diazotized anthranilic acid at a temperature between 0° and 10° C. for 1 to 2 hours; the resulting alkaline solution of o-diselenosalicylic acid is mixed with acetic acid to a pH between 7.5 and 8.5, the thus resulting solution is clarified as soon as it becomes turbid and thereafter is treated with activated charcoal and thereafter, for seperating the activated charcoal, the solution is mixed with acetic acid to a pH between 5 and 6, and the precipitated separated pure o-diselenosalicylic acid still moist with water is mixed with 1.2-dichloroethane, and is heated to boiling with a cyclic water separator for such a time, until or of the water has been distilled off azeotropically,

(c) the o-diselenosalicylic acid resulting from step (b) and suspended in the used solvent in finely divided form is subjected to reaction with thionylchloride in the presence of catalytic amounts of dimethylformamide; the solvent and the excess thionylchloride is distilled off from the reaction mixture; possibly still present thionylchloride is removed by adding at least twice the used solvent and distilling it off and

(d) the purified o-chloroselenobenzoic acid chloride obtained in step (c) is dissolved in 1.2-dichloroethane, and, with careful stirring, the resulting solution is added to a suspension of aniline in dilute soda lye; and the precipitated reaction product is separated, washed until neutral and is dried.

5,008,395

PURIFICATION OF ISOTHIAZOLONES

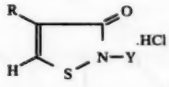
Ramesh B. Petigara, Hatfield, and Douglas N. Sharp, Bensalem, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 22, 1988, Ser. No. 289,069

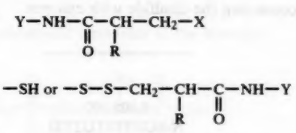
Int. Cl.[5] C07D *513/00*

U.S. Cl. 548—213 **16 Claims**

1. In a crystallization process for preparing substantially pure isothiazolone by preparing crystalline isothiazolone monohydrochloride salts of the formula:



wherein R is hydrogen or methyl and Y is linear or branched alkyl, of from 3 to 10 carbon atoms, from a mixture derived by the chlorination of compounds of the formula



which comprises

conducting the chlorination in a chlorinated hydrocarbon solvent to afford a crude reaction mixture containing isothiazolone hydrochloride in a solution due to excess hydrogen chloride; the improvement comprising

(a) reducing the excess hydrogen chloride to about 1.2 moles per mol of isothiazolone while maintaining the temperature in a range of about 46° to 60° C.;

(b) cooling the reaction mixture slowly until tiny seed crystals form at about 46° C. then applying temperature/time thermal oscillating conditions to allow tiny seed crystals to grow in a timely manner into filterable crystals of the salt while avoiding formation of any new tiny crystals; and

(c) collecting the crystals

5,008,396

PROCESS FOR THE PREPARATION OF 5-AMINO-3-CHLOROSULFONYL-1,2,4-TRIAZOLE

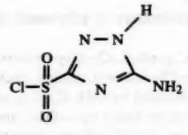
Richard C. Krauss, Midland, Mich., assignor to DowElanco, Indianapolis, Ind.

Filed Nov. 6, 1989, Ser. No. 432,289

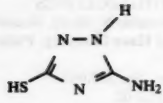
Int. Cl.[5] C07D *249/12*

U.S. Cl. 548—263.8 **10 Claims**

1. A process for preparing 5-amino-3-chlorosulfonyl-1,2,4-triazole

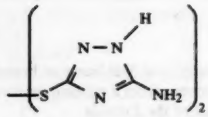


from 5-amino-3-mercapto-1,2,4-triazole



in an aqueous acid medium which comprises the consecutive steps of:

(a) contacting the 5-amino-3-mercapto-1,2,4-triazole with an oxidizing agent to convert it to the corresponding disulfide



(b) contacting the disulfide with chlorine.

5,008,397

N-SUBSTITUTED BENZIMIDAZOLE-2-CARBOXANILIDES

Peter Spang, St. Ingbert; Peter Neumann, Mannheim; Gerhard Wagenblast, Frankenthal, and Hubert Trauth, Dudenhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

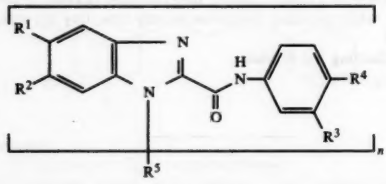
Filed Aug. 15, 1989, Ser. No. 393,962

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1988, 3828537

Int. Cl.[5] C07D *235/04*

U.S. Cl. 548—331 **7 Claims**

1. A compound of the formula (I)



(I)

where

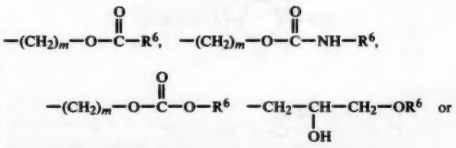
R^1 and R^2 are each independently of the other H, Cl, C_1–C_4-alkyl, C_1–C_4-alkoxy, unsubstituted or C_1–C_4-alkyl- or C_1–C_4-alkoxy-substituted phenyl or C_7–C_9-phenylalkyl,

R^3 and R^4 are each independently of the other H, C_1–C_{18}-alkyl, C_3–C_{18}-alkyl which is interrupted one or more times by —O—, C_1–C_{18}-alkoxy, C_4–C_{18}-alkoxy which is interrupted one or more times by —O—, unsubstituted or C_1–C_4-alkyl- or C_1–C_4-alkoxy-substituted phenyl, C_7–C_{15}-phenylalkyl, phenoxy, C_7–C_{15}-phenylalkyloxy, C_1–C_{12}-alkylcarbonylamino, benzoylamino, C_1–C_{12}-alkanoyloxy or benzoyloxy, or

R^3 and R^4 together are methylenedioxy or ethylenedioxy,

n is 1 or 2 and

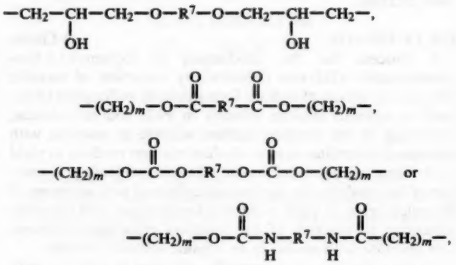
R^5 is (a)—when n is 1 —C_5–C_{18}-alkyl, C_2–C_{10}-hydroxyalkyl, C_5–C_{12}-cycloalkyl, C_2–C_{18}-alkenyl, which cycloalkyl and alkenyl may be substituted by OH, C_3–C_{18}-alkyl which is interrupted one or more times by —O—, unsubstituted or C_1–C_4-alkyl- or C_1–C_4-alkoxy-substituted C_8–C_{15}-phenylalkyl or a radical of the formula



where

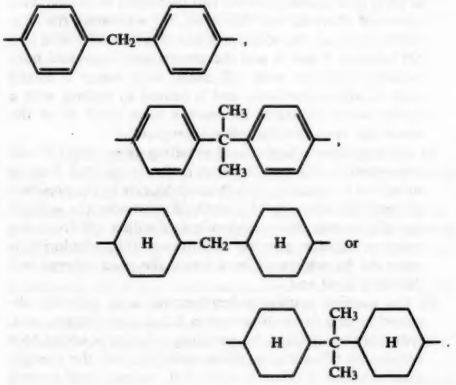
m is from 2 to 4 and

R^6 is C_1–C_{18}-alkyl, C_2–C_{18}-alkenyl, C_5–C_{12}-cycloalkyl, C_7–C_{15}-phenylalkyl, unsubstituted or C_1–C_4-alkyl- or C_1–C_4-alkoxy-substituted phenyl or naphthyl, or (b)-when n is 2-C_2–C_{10}-alkylene, C_5–C_{12}-cycloalkylene, which alkylene and cycloalkylene may be substituted by —OH, C_4–C_{12}-alkenylene, C_4–C_8-alkylene which is interrupted one or more times by —O—, or a radical of the formula



where

R^7 is C_2–C_8-alkylene, C_2–C_8-alkenylene, C_5–C_{12}-cycloalkylene, unsubstituted or C_1–C_4-alkyl- or C_1–C_4-alkoxysubstituted phenylene, naphthylene, diphenylene or a radical of the formula



5,008,398

PREPARATION OF P-NITROPHENYL-IMIDAZOLES

Hermann Koehler, Bobenheim; Klaus Ebel, Mutterstadt; Helmut Karn, Ludwigshafen, and Christof Taubitz, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

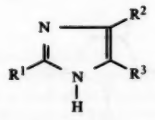
Filed Oct. 2, 1989, Ser. No. 416,027

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1988, 3835195

Int. Cl.[5] C07D *233/60*

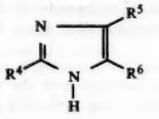
U.S. Cl. 548—342 6 Claims

1. In a process for the preparation of a p-nitrophenylimidazole of the formula



(I)

where R^1, R^2 and R^3 independently of one another are hydrogen, alkyl, cycloalkyl or p-nitrophenyl, with the proviso that one or more of the radicals R^1, R^2 and R^3 is p-nitrophenyl, by reacting a phenylimidazole of the formula



(II)

where R^4, R^5 and R^6 independently of one another are hydrogen, alkyl, cycloalkyl, phenyl or p-nitrophenyl, with the proviso that one or more of the radicals R^4, R^5 and R^6 is phenyl, with mixtures of sulfuric acid and nitric acid, the improvement which comprises:

carrying out the reaction in the presence of urea.

5,008,399

DIASTEREOSELECTIVE PREPARATION OF PHOSPHINATE ESTERS

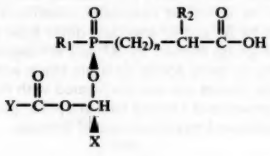
Thomas C. Sedergran, Plainsboro, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 19, 1990, Ser. No. 467,451

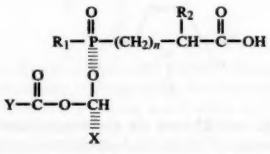
Int. Cl.[5] C07B *53/00;* C07F *9/572, 9/32*

U.S. Cl. 548—413 11 Claims

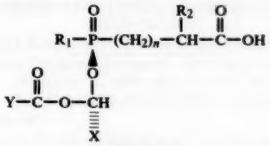
1. A process for preparing the desired diastereomeric pair containing



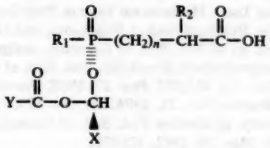
and



in increased yield, relative to the undesired diastereomeric pair containing

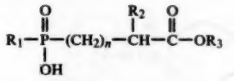


and

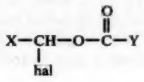


which comprises

(a) reacting a phosphinic acid ester of the formula



with a halo ester of the formula



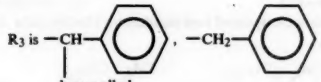
in the presence of 4-methylmorpholine, diazabicyclooctane, quinuclidine, 1-methylpyrolidine, or cinchonidine in an organic solvent at a temperature of about 40° C. to about 138° C. to give an intermediate comprising a mixture of 4 isomers;

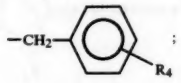
(b) hydrogenating the mixture ob 4 isomers from step (a) to remove the R_3 ester group and give the desired diastereomeric pair in increased yield from the undesired diastereomeric pair wherein:

R_1 is lower alkyl, cycloalkyl, aryl, aryl-lower alkyl, or cycloalkyl-lower alkyl;

n is zero or one;

R_2 is hydrogen, lower alkyl, or aryl-lower alkyl;

R_3 is 



R_4 is lower alkyl, lower alkoxy, phenyl,

or di(lower alkyl)amino;

Hal is Br or Cl;

X is hydrogen, lower alkyl, or phenyl; and
Y is hydrogen, lower alkyl, lower alkoxy, or phenyl.

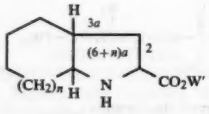
5,008,400

BICYCLIC AMINOACIDS AS INTERMEDIATES

Hansjörg Urbach, Kronberg; Rainer Henning, Frankfurt am Main; Volker Teetz, Hofheim am Taunus; Rolf Geiger, Frankfurt am Main; Reinhard Becker, Wiesbaden, and Holger Gaul, Niederneisen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 453,092, Dec. 27, 1982, abandoned. This application Nov. 21, 1984, Ser. No. 673,605
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1981, 3151690; Mar. 24, 1982, 3210701
Int. Cl.[5] C07D *209/12, 209/52*
U.S. Cl. 548—452 5 Claims

1. A compound of the formula



wherein the H atoms on the C atoms in the 3a- and (6+n)a-positions are in the trans configuration relative to one another n is 0, 1 or 2; and W' is hydrogen or a group which can be cleaved by hydrogenolysis or acid hydrolysis.

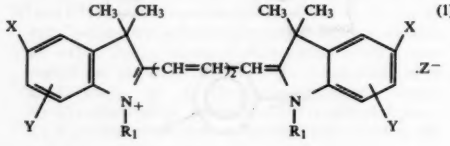
5,008,401

CYANINE COMPOUNDS

Masayuki Utsunomiya, Ashiya; Shigeo Fujita, Kawachinagano; Toshiyuki Nozawa, Sakai, and Morihiro Kamiyama, Ibaraki, all of Japan, assignors to Asahi Chemical Co., Ltd., Osaka, Japan

Filed Apr. 17, 1990, Ser. No. 509,830
Int. Cl.[5] C07D *403/06*
U.S. Cl. 548—455 5 Claims

1. A cyanine compound represented by the formula



(I)

wherein:

X is a lower alkoxy, Y is a lower alkyl or a lower alkoxy, R_1 is a lower alkyl, or a lower alkyl substituted with at least one of C_1–C_4 alkoxy, hydroxy, sulfo, carboxy, C_1–C_4 alkyl amino, acetoxy, C_1–C_4 alkoxy carbonyl, C_1–C_4 sodium sulfonate, C_1–C_4 sodium carboxylate, alkyl amino methyl, acetoxy methyl, and methoxyl carbonyl methyl, and Z^- is an anion.

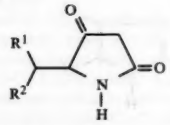
5,008,402

PROCESS FOR PRODUCTION OF 5-ALKYL TETRAMIC ACIDS

Thomas Meul, Visp, Switzerland, assignor to Lonza Ltd., Basel, Switzerland

Division of Ser. No. 402,356, Sep. 5, 1989. This application Mar. 22, 1990, Ser. No. 497,718
Claims priority, application Switzerland, Sep. 6, 1988, 3337/88
Int. Cl.[5] C07D *207/36*
U.S. Cl. 548—544 16 Claims

1. Process for the production of a substituted tetramic acid of formula:

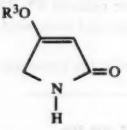


(I)

or a tautomer thereof, wherein

(a) R^1 is a straight-chain or branched alkyl group having 1 to 6 C atoms or a cycloalkyl group having 4 to 7 C atoms or a group of the form—$[CH_2]_n$—Q with n being 1 or 2 and Q being one of the above-mentioned cycloalkyl groups or a phenyl group, and R^2, independently therefrom, is hydrogen or a straight-chain alkyl group having 1 to 4 C atoms, or

(b) R^1 and R^2 together are an optionally branched alkanediyl group, which, in connection with the linking C atom, forms a 4- to 7-member ring optionally substituted with one or more lower alkyl groups, comprising (i) reacting a 3-pyrrolin-2-one of formula:

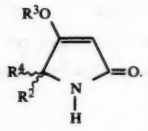


(II)

wherein R^3 is a straight-chain or branched alkyl group having 1 to 4 C atoms or a benzyl group optionally substituted with one or more lower alkyl groups, with an aldehyde or ketone of formula:

(III)

wherein either R^2 and R^4 have the meaning mentioned above for R^2 and R^1 or R^4 or the optionally substituted alkanediyl group, formed by R^2 and R^4 together, differ from R^1 or from the alkanediyl group formed by R^1 and R^2 together by the presence of one or more double or triple bonds not belonging to any aromatic system and not conjugated with the carbonyl group, in the presence of a strong base in a polar, protic solvent to form 5-alkylidene-3-pyrrolin-2-one of formula:

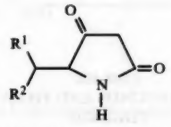


(IV)

wherein R^2, R^3 and R^4 have the above-mentioned meanings, (ii) cleaving radical R^3 from the 5-alkylidene-3-pyrrolin-2-one of formula IV, and (iii) catalytically hydrogenating the exocy-

clic double bond as well as the multiple bonds optionally present in radical R^4 of the cleaved 5-alkylidene-3-pyrrolin-2-one with a palladium catalyst to provide the substituted tetramic acid of formula I.

12. Process for the production of a substituted tetramic acid of formula:

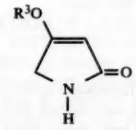


(I)

or a tautomer thereof, wherein

(a) R^1 is a straight-chain or branched alkyl group having 1 to 6 C atoms or a cycloalkyl group having 4 to 7 C atoms or a group of the form—$[CH_2]_n$—Q with n being 1 or 2 and Q being one of the above-mentioned cycloalkyl groups or a phenyl group, and R^2, independently therefrom, is hydrogen or a straight-chain alkyl group having 1 to 4 C atoms, or

(b) R^1 and R^2 together are an optionally branched alkanediyl group, which, in connection with the linking C atom, forms a 4- to 7-member ring optionally substituted with one or more lower alkyl groups, comprising (i) reacting a 3-pyrrolin-2-one of formula:

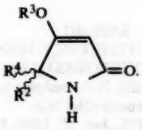


(II)

wherein R^3 is a benzyl group optionally substituted with one or more lower alkyl groups, with an aldehyde or ketone of formula:

(III)

wherein either R^2 and R^4 have the scanning mentioned above for R^2 and R^1 and R^4 together, differ from R^1 or from the alkanediyl group formed by R^1 and R^2 together by the presence of one or more double or triple bonds not belonging to any aromatic system and not conjugated with the carbonyl group, in the presence of a strong base in a polar, protic solvent to form 5-alkylidene-3-pyrrolin-2-one of formula:



(IV)

wherein R^2, R^3 and R^4 have the above-mentioned meanings, and (ii) catalytically hydrogenating the 5-alkylidene-3-pyrrolin-2-one of formula IV using a palladium catalyst whereby radical R^3 is cleaved from the 5-alkylidene-3-pyrrolin-2-one and the exocyclic double bond as well as the multiple bonds optionally present in radical R^4 are hydrogenated.

5,008,403

DEACYLATIVE BROMINATION PROCESS FOR THE PREPARATION OF MOLLUSCICIDAL 2,4,5-TRIBROMOPYRROLE-3-CARBONITRILE COMPOUNDS

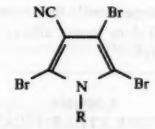
Venkataraman Kameswaran, Princeton Junction, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 7, 1989, Ser. No. 447,961

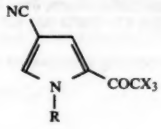
Int. Cl.[5] C07B *39/00*; C07D *207/34*

U.S. Cl. 548—561 **9 Claims**

1. A process for the preparation of a compound having the structure:



wherein R is hydrogen or C_1–C_6 alkyl which comprises reacting a compound having the structure:



wherein R is hydrogen or C_1 to C_6 alkyl and X is fluorine or chlorine with at least about 5 molar equivalents of a base and at least about 2 molar equivalents of a brominating agent in the presence of a solvent.

5,008,404

PREPARATION OF AZETIDINONES VIA NOVEL PROTECTED INTERMEDIATES

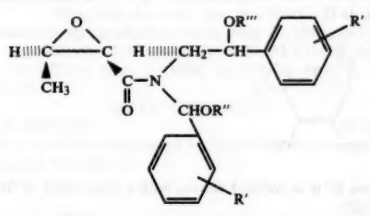
Samuel Chackalamannil, W. Paterson, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 227,084, Nov. 28, 1988, Pat. No. 4,963,670. This application Mar. 20, 1990, Ser. No. 496,468

Int. Cl.[5] C07D *303/12, 205/08*

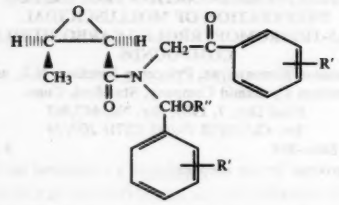
U.S. Cl. 549—215 **4 Claims**

1. A compound represented by the formula



wherein R''' is hydrogen, $—Si(CH_3)_3$ or $—Si(CH_3)_2$ t-C_4H_9 each R' is independently hydrogen, one, two or three of halogen, lower alkyl or lower alkoxy and R'' is methyl, ethyl, allyl or a phenyl.

3. A compound represented by the formula



wherein each R′ is independently hydrogen, one, two or three of halogen, lower alkyl or lower alkoxy and R″ is methyl, ethyl, allyl, or a phenyl.

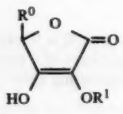
5,008,405

SELECTIVE ETHERIFICATION

Chitoshi Hatanaka, Nagaokakyo, and Satoru Oi, Nara, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 19, 1990, Ser. No. 467,419
Claims priority, application Japan, Jan. 21, 1989, 1-12755
Int. Cl.[5] C07D *307/62*
U.S. Cl. 549—315 **10 Claims**

1. A process for producing a compound of the formula (IV):

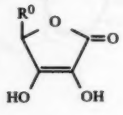


(IV)

where R^o is hydrogen, alkyl having 1 to 6 carbon atoms, phenyl, a group of the formula

or a group of the formula

(wherein X an acetal or ketal group); and R^1 is an alkyl or alkenyl group having up to 22 carbon atoms which may be substituted with phenyl or alkoxy having 1 to 22 carbon atoms, which comprises reacting a compound of the formula (I):



(I)

wherein R^o is as defined above, with a compound of the formula (II):

(II)

wherein R^1 is as described above; and Y is halogen or optionally substituted sulfonyloxy, in the presence of a compound of the formula (III):

(III)

wherein R is hydrogen, or primary, secondary or tertiary alkyl having 1 to 10 carbon atoms; and Z is an alkali metal or an alkaline earth metal.

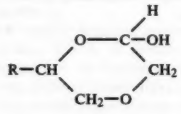
5,008,406

HEMIACETAL COMPOUNDS AND THE APPLICATIONS THEREOF

Guy Vanlerberghe, Claye-Souilly; Alexandre Zysman, and Henri Sebag, both of Paris, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 874,006, Jun. 13, 1986, Pat. No. 4,827,003. This application Apr. 20, 1989, Ser. No. 340,754
Claims priority, application Luxembourg, Jun. 14, 1985, 85952
The portion of the term of this patent subsequent to May 2, 2006, has been disclaimed.
Int. Cl.[5] C07D *231/08*
U.S. Cl. 549—378 **2 Claims**

1. Compound corresponding to the formula:



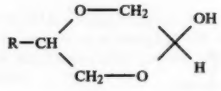
(ID)

in which R denotes

(i) a linear or branched hydrocarbon radical which has 1 to 32 carbon atoms and can contain one or more oxygen atoms in the chain or bear one or more OH groups or

(ii) a (C_8–C_{18} alkyl)phenyl radical.

2. Compound corresponding to the formula:



(IE)

in which R denotes

(i) a linear or branched hydrocarbon radical which has 1 to 32 carbon atoms and can contain one or more oxygen atoms in the chain or bear one or more OH groups or

(ii) a (C_8–C_{18} alkyl)phenyl radical.

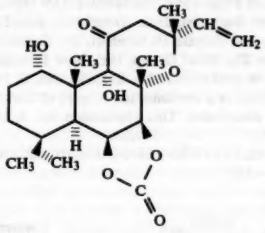
5,008,407

METHOD OF SYNTHESIZING FORSKOLIN FROM 9-DEOXYFORSKOLIN

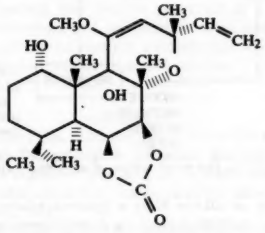
Nicholas J. Hrib, Somerville, N.J., assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 300,878, Jan. 25, 1989, Pat. No. 4,897,496, which is a division of Ser. No. 147,427, Jan. 25, 1988, Pat. No. 4,822,896, which is a division of Ser. No. 846,550, Mar. 31, 1986, Pat. No. 4,734,513. This application Nov. 24, 1989, Ser. No. 456,925
Int. Cl.[5] C07D *311/92*
U.S. Cl. 549—383 **1 Claim**

1. A method of preparing the compound of the formula



which comprises hydrolyzing the compound of the formula



under an acidic condition to afford said compound.

5,008,408

PREPARATION OF 1,4-BUTANEDIOL AND TETRAHYDROFURAN

Rolf Fischer, Heidelberg; Juergen Frank, Schwetzingen; Franz Merger, Frankenthal, and Hans-Juergen Weyer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 7, 1990, Ser. No. 489,709

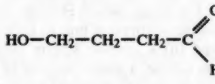
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1989, 3909485

Int. Cl.[5] C07D *307/08*

U.S. Cl. 549—429 **7 Claims**

1. A two-stage process for preparing a mixture which contains 1,4-butanediol and tetrahydrofuran, which comprises:

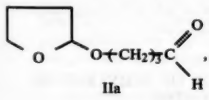
(a) heating 4-hydroxybutyraldehyde of the formula



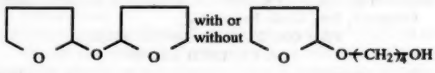
Ia

at 20°–300° C. in the presence or absence of 1,4-butanediol, and in the presence or absence of an acidic agent; and

(b) after removing the water of reaction and any acidic agent, subjecting the resulting acetals of the formulae



IIa



IIb IIc

to a catalytic hydrogenation at 50°–300° C. and 1–350 bar.

5,008,409

PROCESS FOR PREPARING 1,4-BRIDGED CYCLOHEXANE CARBOXYLIC ACID DERIVATIVES

Masayuki Narisada, Ibaraki; Mitsuaki Ohtani, Nara; Fumihiko Watanabe, Kitakatsuengi, and Kyozo Kawata, Hirakata, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

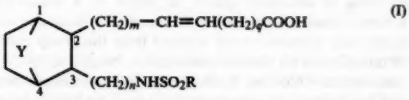
Filed Dec. 7, 1989, Ser. No. 447,513

Claims priority, application Japan, Dec. 14, 1988, 63-315970

Int. Cl.[5] C07D *307/00;* **C07C** *311/16, 311/20*

U.S. Cl. 549—463 **5 Claims**

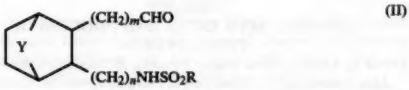
1. A process for preparing a compound of Formula (I):



(I)

wherein R is phenyl or phenyl substituted with hydroxy, lower alkoxy, halogen or lower alkyl; Y is unsubstituted or substituted methylene, ethylene, vinylene or oxygen; m is 0 or 1; n is 0, 1 or 2; and q is 1, 2, 3 or 4; with proviso that when m is 0, n is not 0, and when m is 1, n is not 2, which process comprises:

(a) reacting an aldehyde of Formula (II);



(II)

wherein R, Y, m and n are as defined above, under reaction conditions for the Wittig Reaction with a ylide of Formula (III):

$$(R^1)_3P{=}CH(CH_2)_qCOOM \qquad \text{(III)}$$

wherein R^1 is C_1–C_8 alkyl or aryl, M is an alkali metal and q is as defined above;

(b) treating the reaction mixture of step (a) with an alkaline earth metal halide under alkaline conditions to form the alkaline earth metal salt of the carboxylic acid of Formula (I);

(c) extracting the alkaline earth metal salt of the carboxylic acid of Formula (I) in an organic solvent; and

(d) recovering the free carboxylic acid of Formula (I) from the organic solvent.

5,008,410

METHOD FOR PRODUCING FURFURYL ALCOHOLS

Kazuo Tashiro, Oita, and Kunihiko Tanaka, Nara, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

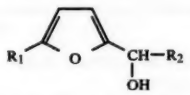
Filed May 26, 1987, Ser. No. 53,687

Claims priority, application Japan, May 28, 1986, 61-122925; May 28, 1986, 61-122926; Jul. 28, 1986, 61-177119; Jul. 28, 1986, 61-177120; Dec. 3, 1986, 61-288352; Dec. 3, 1986, 61-288353

Int. Cl.[5] C07D *307/02*

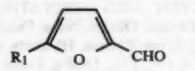
U.S. Cl. 549—497 **10 Claims**

1. A method for producing a furfuryl alcohol represented by the general formula (I),



(I)

wherein R_1 represents a hydrogen atom or a methyl group and R_2 represents an allyl or propargyl group, which comprises reacting a furfural represented by the general formula (II),



(II)

wherein R_1 has the same meaning as described above, with a halogen compound represented by the general formula,

$$X—R_2$$

wherein X represents a halogen atom and R_2 has the same meaning as described above, in water or a water/organic solvent mixed system, in the presence of at least one organic quaternary ammonium salt selected from the group consisting of tetra(C_2–C_5 alkyl)ammonium halide, benzyltri(C_2–C_3 alkyl-)ammonium chloride, dodecyltrimethyl-ammonium bromide and cetyltrimethylammonium chloride as well as an inorganic ammonium salt and zinc.

5,008,411

GLYCIDIC ACID ESTER AND PROCESS OF PREPARATION

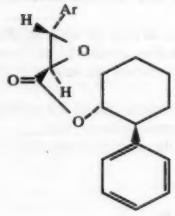
David L. Coffen, Glen Ridge; Pradeep B. Madan, Edison, and Alan Schwartz, Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 197,934, May 24, 1988, abandoned. This application Oct. 2, 1989, Ser. No. 416,295

Int. Cl.[5] C07D *306/13, 301/02*

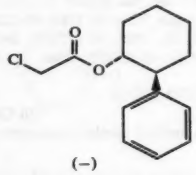
U.S. Cl. 549—519 **5 Claims**

1. A process for preparing the compound of the formula



III

wherein Ar is p-lower alkoxy phenyl,
which comprises reacting the compound of formula



II

with the compound of formula

$$Ar—CHO$$

wherein Ar is as described above,
in a solvent in the presence of a basic reagent.

5,008,412

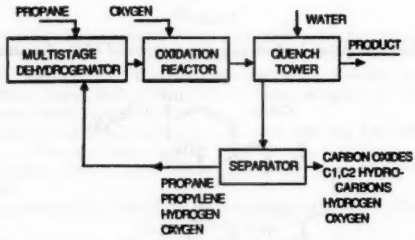
PROCESS FOR THE PRODUCTION OF OXIDES

Ramakrishnan Ramachandran; Donald L. MacLean, both of Annandale, and Donald P. Satchell, Jr., Summit, all of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Continuation-in-part of Ser. No. 215,859, Jul. 6, 1988, Pat. No. 4,859,537, which is a continuation-in-part of Ser. No. 154,157, Feb. 9, 1988, abandoned. This application Jul. 6, 1989, Ser. No. 376,331

Int. Cl.[5] C07D *301/04, 301/08, 301/10*

U.S. Cl. 549—523 **22 Claims**



1. A process for the production of alkylene oxides comprising:

(a) forming an alkene from a gaseous alkane by passage through a multistage catalytic dehydrogenator, comprised of a series of at least three discrete catalytic reactors, wherein a dehydrogenator product stream containing said alkene and unreacted alkane is withdrawn from a reactor intermediate the first and last of said reactors, wherein the gaseous flow between all of said reactors in sequence, up to and including the reactor from which the product stream is withdrawn, is passed through a heating means to raise the temperature thereof, and wherein the catalyst in the dehydrogenator is passed through all of said reactors, regenerated and recycled to the first reactor;

(b) introducing said alkene stream and an oxygen source selected from the group consisting of pure oxygen, air or a gas enriched in oxygen relative to air into suitable oxidation reactor for reaction in the presence of an oxidation catalyst to about 100° to 500° C. 0 to 1000 psig, and a residence time from a few seconds up to 1 hour to produce a gaseous effluent containing said oxide;

(c) quenching said gaseous effluent in a liquid to form a liquid phase containing said oxide and a gas phase;

(d) recovering said oxide from the liquid phase;

(e) introducing the gas phase quench effluent under pressure into a pressure swing adsorption unit to thereby form (i) a waste stream, and (ii) a gaseous stream comprising said unreacted alkane, alkene, a minor amount of oxygen, and nitrogen when air or oxygen-enriched air is introduced as the oxygen source into the reactor in step (b);

(f) introducing said gaseous stream into the reactor in said dehydrogenator which immediately follows in sequence the intermediate reactor from which the product stream was withdrawn, thereby removing substantially all of the oxygen contained in said stream;

(g) recycled the effluent from the last reactor of said dehydrogenator to another reactor of said dehydrogenator.

5,008,413

CATALYST FOR OXIDATION OF ETHYLENE TO ETHYLENE OXIDE

Kintoken H. Liu, Park Ridge, N.J., assignor to Scientific Design Company, Inc., Little Ferry, N.J.

Filed Oct. 23, 1989, Ser. No. 424,932

Int. Cl.[5] C07D *301/10*

U.S. Cl. 549—534 **18 Claims**

1. In the process for the production of ethylene oxide by contacting ethylene with molecular oxygen in the presence of

a solid catalyst wherein the improvement comprises using a catalyst prepared by a process comprising the steps of:

(a) impregnating a porous support having a surface area of about 0.2 to 2.0 m^2/g with a hydrocarbon solution of a silver salt of a neo-acid having 7 or more carbon atoms sufficient to provide 3 to 25 wt % silver on the support, and separating the impregnated support form said solution;

(b) activating said impregnated support by heating in air for sufficient time to produce an active catalyst;

(c) impregnating said activated catalyst with a solution containing an alkali metal compound in the range of 650 to 8000 wppm in an amount sufficient to depress the activity and selectivity of said activated catalyst to produce a catalyst precursor, said alkali metal being selected from the group consisting of sodium, potassium, cesium, and rebidium and

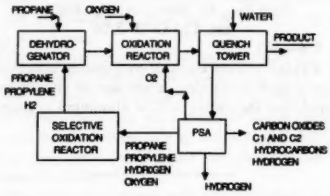
(d) heat treating said catalyst precursor in a substantially inert atmosphere at a temperature of at least 450° C. for between 0.1 to 4.5 hours at a steady state to reactivate the precursor to produce an active catalyst.

5,008,414

PROCESS FOR THE PRODUCTION OF OXIDES

Ramakrishnan Ramachandran, Allendale; Donald L. MacLean, Annandale; Donald P. Satchell, Jr., Summit, and Virginia A. Malik, Linden, all of N.J., assignors to The BOC Group, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 281,581, Dec. 8, 1988, Pat. No.
Int. Cl.[5] C07D *301/10, 301/08, 301/32*
U.S. Cl. 549—538 **27 Claims**



1. In a process for the production of alkylene oxides comprising:

(a) forming an alkene from a gaseous alkane in a catalytic dehydrogenator;

(b) introducing a gaseous stream comprising said alkene and an oxygen source selected from the group consisting of pure oxygen or a gas enriched in oxygen relative to air into a suitable oxidation reactor and reacting them in the presence of an oxidation catalyst at about 100 to 500° C. 10 to 1000 psig, and a residence time from a few seconds up to 1 hour to produce a gaseous effluent containing said oxide;

(c) quenching said effluent in a liquid to form a liquid phase containing said oxide and a gaseous phase;

(d) recovering said oxide from said liquid phase;

(e) introducing the gaseous phase under pressure into a separator to thereby form (i) a waste stream, (ii) an adsorbed stream comprising said unreacted alkane and alkene, a minor amount of oxygen, and nitrogen when oxygen-enriched air is introduced into the reactor as the oxygen source in step (b), (iii) and a hydrogen-enriched stream;

(f) introducing said adsorbed stream into a catalytic selective oxidation unit to remove the remaining oxygen in said stream; and

(g) recycling the effluent from the selective oxidation unit to the dehydrogenator, the improvement wherein the separator also forms a oxygen-enriched stream, with nitrogen when present, which is at least partially recycled to the oxidation reactor.

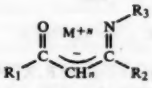
5,008,415

VOLATILE FLUORINATED β-KETOIMINES AND ASSOCIATED METAL COMPLEXES

John A. T. Norman, Whitehall, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 270,719, Nov. 14, 1988, Pat. No. 4,950,790. This application Sep. 22, 1989, Ser. No. 411,275
Int. Cl.[5] C07F *1/08, 15/06, 7/08, 7/18*
U.S. Cl. 556—32 **7 Claims**

1. A thermally volatilizable, β-ketoiminato metal complex having the structural formula:



wherein R_1 and R_2 are independently linear or branched, perfluorinated, C_1–C_8 alkyl groups, R_3 is an unfluorinated, partially fluorinated or fully fluorinated phenyl or C_1–C_8 alkyl, hydroxyalkyl or ether group, M is a metal which is capable of forming a complex with a ligand as shown above, and n=1, 2 or 3.

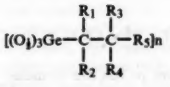
5,008,416

ORGANOGERMANIUM COMPOUND, PROCESS FOR THE PREPARATION OF SAME AS WELL AS USE THEREOF

Masayasu Kurono; Yasuaki Kondo; Takahiko Mitani; Yutaka Baba, and Kiichi Sawai, all of Aichi, Japan, assignors to Sanwa Kagaku Kenkyusho Co., Ltd., Aichi, Japan

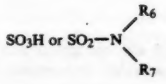
Filed Jun. 19, 1990, Ser. No. 540,535
Claims priority, application Japan, Jun. 20, 1989, 1-155585; Nov. 20, 1989, 1-299636
Int. Cl.[5] C07F *7/30*
U.S. Cl. 556—89 **2 Claims**

1. An organogermanium compound of the formula



(I)

wherein R_1, R_2, R_3 and R_4 are hydrogen atom, alkyl, substituted alkyl, phenyl or substituted phenyl, and R_5 is a radical of



n is an integer of 2 or more, and R_6 and R_7 are hydrogen atom, alkyl, substituted alkyl, phenyl or substituted phenyl, and a salt thereof.

5,008,417

HALOALKYLATION PROCESS

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 21, 1990, Ser. No. 525,827
Int. Cl.[5] C07F *7/22, 7/30, 9/02*
U.S. Cl. 556—104 **29 Claims**

1. A process for preparing haloalkyl-substituted compounds said process comprising treating a compound selected from the group

R_xSnZ_y, $R_{x1}{}^1PZ_{y1}$, and $R_{x2}{}^2GeZ_{y2}$

wherein R, R^1 and R^2 are the same or different and are C_1 to

C_6 linear or branched alkyl, phenyl unsubstituted or substituted with C_1 to C_6 linear or branched alkyl or halo; amino unsubstituted or having at least one hydrogen substituted with C_1 to C_6 linear or branched alkyl or phenyl unsubstituted or substituted with C_1 to C_6 linear or branched alkyl; Z is halo; and x, y, x_2 and y_2 are integers from 1 to 3; and x_1 and y_1 are integers from 1 to 4, with the proviso that the sum of x and y and the sum of x_2 and y_2 is equal to 4 and the sum of x_1 and y_1 is at least 3 but not greater than 5 with a haloalkylating reagent comprising an admixture of a haloalkyl halide with a tris(di C_1 to C_6 linear or branched alkylamino)phosphine and forming a compound selected from the group

$$R_xSnZ'_y,\ R_{x1}{}^1PZ'_{y1},\ \text{and}\ R_{x2}{}^2GeZ'_{y2}$$

Z' is a haloalkyl group and where R, R^1, R^2, x, x_1, x_2, y, y_1 and y_2 are as previously defined.

5,008,418

TRIS(ISONITRILE)COPPER(I) ADDUCTS FOR PREPARING RADIONUCLIDE COMPLEXES

Tahir Iqbal, Lowell, Mass.; John H. Cain, Jr., Merrimack, N.H., and Jack J. Slosky, Shrewsbury, Mass., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 95,124, Sep. 11, 1987, Pat. No. 4,885,100. This application Aug. 23, 1989, Ser. No. 397,529

Int. Cl.[5] C07F *13/00, 1/08;* **C07C** *119/02*

U.S. Cl. 556—112 **3 Claims**

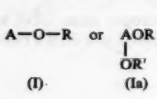
1. A process for preparing a tris(isonitrile) copper (I) adduct of the formula:

$$[Cu(R'')NC_3]X$$

wherein

X is an anion selected from BF_4, PF_6, ClO_4, I, Br, Cl and CF_3COO; and

R'' is alkyl of 1–20 carbon atoms or has the formula:



(I) (Ia)

wherein

A is a straight or branched chain alkylene group; and

R and R' each independently is a straight or branched chain alkyl group or taken together are a straight or branched chain alkylene group, provided that:

(1) the total number of carbon atoms in A plus R in formula (1) is 4 to 6, provided further that when the total number of carbon atoms is 6, then the carbon atom alpha to the isonitrile group is a quarternary carbon, and

(2) the total number of carbon atoms in A plus R plus R' in formula (Ia) is 4 to 9,

comprising

(1) reacting in a suitable solvent about one equivalent weight of:

(a) a tetrakis(acetonitrile)copper(I), BF_4, PF_6, or ClO_4, or

(b) cuprous iodide, bromide or chloride, with about three equivalent weight respectively of:

(a) a tetrakis(isonitrile ligand)copper(I), BF_4, PF_6, or ClO_4, or

(b) an isonitrile ligand; and

(2) removing the solvent to provide a solid tris(isonitrile)-copper(I) product.

5,008,419

NOVEL PLATINUM COMPLEX

Koichi Yokoi, Kashiwa; Kazuhiko Irinoda, Chiba; Hidehiko Kohya, Narita; Susumu Sato, Shisui, and Tatsuhiko Katori, Tone, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

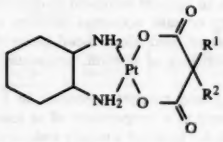
Filed Dec. 18, 1989, Ser. No. 451,637

Claims priority, application Japan, Dec. 27, 1988, 63-330251

Int. Cl.[5] C07F *9/68*

U.S. Cl. 556—137 **2 Claims**

1. A platinum complex having the formula (I):



(I)

wherein R^1 and R^2 may be the same or different and each independently represents a methyl group or an ethyl group, and the configuration of 1,2-diaminocyclohexane is either cis-, trans-l-, trans-d-, or trans-dl-.

5,008,420

NOVEL SPINEL PRECURSORS

Carl C. Greco, Garnerville, N.Y., and Kelly B. Triplett, Stamford, Conn., assignors to Akzo nv, Arnhem, Netherlands

Filed Sep. 18, 1990, Ser. No. 584,549

Int. Cl.[5] C07F *5/06*

U.S. Cl. 556—182 **12 Claims**

1. An alkylaluminum alkoxide-magnesium alkoxide coordination compound containing an amount of aluminum to magnesium such that the molar ratio of aluminum to magnesium is substantially 2:1.

5,008,421

SILYL DERIVATIVES OF 2,6-DIMETHYL-4-ALLYL PHENOL

George L. Brownell, Pittsburgh; Mary K. Hays, Turtle Creek, and Andrew J. Sivak, Edgewood Boro, all of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

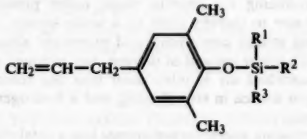
Continuation-in-part of Ser. No. 375,644, Jul. 5, 1989, Pat. No. 4,916,248. This application Oct. 10, 1989, Ser. No. 418,602

The portion of the term of this patent subsequent to Apr. 10, 2007, has been disclaimed.

Int. Cl.[5] C07F *7/08, 7/18*

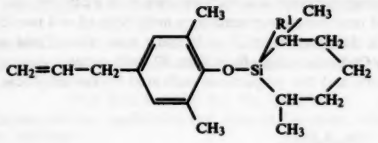
U.S. Cl. 556—406 **4 Claims**

1. A compound of the formula



in which R^1, R^2, and R^3 are independently selected from linear, branched and cyclic hydrocarbon groups having from one to about eight carbon atoms, and at least two of R^1, R^2, and R^3 are connected to form one or more substituted or unsubstituted rings.

3. Compound of the formula



in which R^1 is selected from linear, branched and cyclic hydrocarbon groups having from one to about eight carbon atoms.

5,008,422

POLYSILAZANES AND RELATED COMPOSITIONS, PROCESSES AND USES

Yigal D. Blum, Menlo Park, and Richard M. Laine, Palo Alto, both of Calif., assignors to SRI International, Menlo Park, Calif.

PCT No. PCT/US86/02266, § 371 Date Dec. 1, 1986, § 102(e) Date Dec. 1, 1986

Continuation-in-part of Ser. No. 908,685, Mar. 4, 1986, which is a continuation-in-part of Ser. No. 727,415, Apr. 26, 1985, Pat. No. 4,612,383. This PCT application Oct. 24, 1986, Ser. No. 12,874

The portion of the term of this patent subsequent to Sep. 16, 2003, has been disclaimed.

Int. Cl.[5] C07F 7/10

U.S. Cl. 556—412 **11 Claims**

1. A method of producing polysilazanes useful as preceramic polymers and containing at least one newly formed Si—N bond which comprises:

(a) providing a precursor containing at least one Si—N bond, catalytically cleaving an Si—N bond in the precursor in the presence of a transition metal catalyst effective to activate Si—N bonds, such cleavage being carried out in the presence of hydrogen or a hydrogen donor, and reacting the cleavage product to produce an initial polysilazane product; or

(b) providing one or more reactants which contain an Si—H bond and an N—H bond, and causing reaction to occur between such Si—H and N—H bonds in the presence of a transition metal catalyst effective to activate Si—H and N—H bonds, to produce an initial polysilazane product having at least two Si—N bonds.

5,008,423

POLYMERIC HYDRIDOCHLOROSILAZANES AND PROCESSES FOR THEIR PREPARATION

Thomas Gerdau, Eppstein/Taunus; Hans-Jerg Kleiner, Kronberg/Taunus; Marcellus Peuckert; Martin Brück, both of Hofheim am Taunus, and Fritz Aldinger, Rodenbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 22, 1988, Ser. No. 248,547

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1987, 3733727

Int. Cl.[5] C07F 7/10; C08G 77/12

U.S. Cl. 556—412 **13 Claims**

1. A process for the preparation of a polymeric hydridochlorosilazane, which comprises reacting an oligohydridoalkylsilazane of the formula $(R^1SiHNH)_n$, in which n is 3 to 12 and R^1 denotes an alkyl group with 1 to 6 carbon atoms, with a dichlorohydridoalkylsilane of the formula R^2SiHCl_2, in which R^2 denotes an alkyl group having 1 to 6 carbon atoms, at 30° to 300° C.

5,008,424

WATER SHEETING ZWITTERIONOMERIC AMINOFUNCTIONAL SILOXANES

Daniel J. Halloran, Midland; Kenneth A. Kasprzak, Saginaw, both of Mich.; Stefano G. Savastano, Somerset, N.J., and Terence J. Swihart, Essexville, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 460,708, Jan. 4, 1990, Pat. No. 4,950,506, which is a division of Ser. No. 293,842, Jan. 5, 1989, Pat. No. 4,898,614. This application May 4, 1990, Ser. No. 519,188

Int. Cl.[5] C07F 7/10

U.S. Cl. 556—419 **14 Claims**

1. A method of making an aminofunctional siloxane zwitterionomer comprising reacting an acid anhydride with an aminofunctional siloxane selected from the group consisting of (A) a combination of a hydroxyl endblocked polydimethylsiloxane having a viscosity in the range of about 10 to 15,000 cs at twenty-five degrees centigrade, and a silane selected from the group consisting of those having the general formulae $R''_n(R'O)_{3-n}Si(CH_2)_3NHR'''$ and $R''_n(R'O)_{3-n}SiRNHCH_2CH_2NH_2$ wherein R''' is a hydrogen atom or a methyl radical, R'' is a monovalent hydrocarbon radical free of aliphatic unsaturation and contains from one to six carbon atoms, n has a value of from zero to two, R' is an alkyl radical containing from one to four carbon atoms, and R is a divalent hydrocarbon radical free of aliphatic unsaturation and contains three to four carbon atoms, (B) a combination of a hydroxyl endblocked polydimethylsiloxane having a viscosity in the range of about 10 to 15,000 cs at twenty-five degrees centigrade, a silane selected from the group consisting of those having the general formulae $(R_1O)_3—SiR_2NHR_3$ and $(R_1O)_3—SiR_2NHCH_2CH_2NH_2$ wherein R_1 is an alkyl radical containing from one to four carbon atoms, R_2 is a divalent hydrocarbon radical free of aliphatic unsaturation and contains from three to four carbon atoms, and R_3 is selected from the group consisting of the hydrogen atom and the methyl radical, and a silane having the general formula X_3SiZ wherein X is selected from the group consisting of alkoxy and acyloxy radicals containing from one to four carbon atoms, and Z is a nonhydrolyzable radical selected from the group consisting of hydrocarbon radicals, halogenated hydrocarbon radicals, and radicals composed of carbon, hydrogen, and oxygen atoms, wherein the oxygen atoms are present in hydroxyl groups, ester groups, or ether linkages, there being from one to ten carbon atoms in the Z radical, and (C) a combination of a polydimethylsiloxane having a viscosity in the range of about one to 15,000 cs at twenty-five degrees centigrade, and a silane selected from the group consisting of those having the general formulae $R''_n(R'O)_{3-n}Si(CH_2)_3NHR'''$ and $R''_n(R'O)_{3-n}SiRNHCH_2CH_2NH_2$ wherein R''' is a hydrogen atom or a methyl radical, R'' is a monovalent hydrocarbon radical free of aliphatic unsaturation and contains from one to six carbon atoms, n has a value of from zero to two, R' is an alkyl radical containing from one to four carbon atoms, and R is a divalent hydrocarbon radical free of aliphatic unsaturation and contains three to four carbon atoms.

5,008,425

TRIFLUOROMETHYLATION OF CARBONYL COMPOUNDS

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 177,153, Apr. 4, 1988, abandoned, and a continuation-in-part of Ser. No. 196,680, May 20, 1988, Pat. No. 4,871,877. This application Apr. 12, 1989, Ser. No. 337,186

The portion of the term of this patent subsequent to Oct. 3, 2006, has been disclaimed.

Int. Cl.[5] C07F 7/08, 7/18, 7/10

U.S. Cl. 556—436 **13 Claims**

1. A process which comprises reacting under substantially anhydrous conditions a perfluoroalkyltrihydrocarbylsilane and

a carbonyl compound in the presence of a catalyst such that the carbonyl compound is perfluoroalkylated.

5,008,426

NOVEL 6-ACYL-(6H)-DIBENZ[C,E][1,2]OXAPHOSPHORIN 6-OXIDES, THEIR PREPARATION AND THEIR USE AS PHOTOINITIATORS

Hans-Jerg Kleiner, Kronberg; Joachim Gersdorf, Wiesbaden, and Udo Bastian, Ratingen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

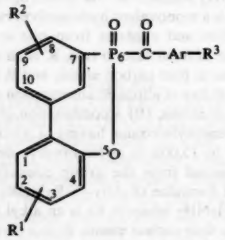
Filed Aug. 22, 1988, Ser. No. 235,004

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1987, 3728169; May 26, 1988, 3817860

Int. Cl.[5] C07F *9/32*; C09D *3/727*; C08F *2/50*; G03F *7/10*

U.S. Cl. 558—82 **17 Claims**

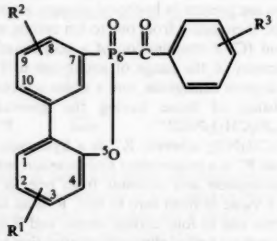
1. A 6-acyl-(6H)-dibenz(c,e)(1,2)-oxaphosphorin-6-oxide of the formula



(I)

wherein each of R^1, R^2 and R^3 are present once or more than once, wherein R^1 and R^2 represent hydrogen or chlorine, R^3 represents hydrogen, chlorine or alkyl or alkoxy each having from 1 to 6 carbon atoms and wherein Ar represents an aromatic hydrocarbon group having from 6 to 10 carbon atoms.

11. A 6-acyl-(6H)-dibenz(c,e)(1,2)-oxaphosphorin-6-oxide of the formula



wherein each of R^1, R^2 and R^3 are present once or more than once, wherein R^1 and R^2 represent hydrogen or chlorine and R^3 represents hydrogen, chlorine or alkyl or alkoxy each having from 1 to 6 carbon atoms.

5,008,427

AMMOXIDATION OF PARAFFINS

James F. Brazdil, Jr., Mayfield Village; Mark A. Toft, Lakewood, and Linda C. Glaeser, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 23, 1988, Ser. No. 289,095

Int. Cl.[5] C07C *253/24*

U.S. Cl. 558—319 **12 Claims**

1. A process for making an α,β-unsaturated mononitrile, selected from acrylonitrile and methacrylonitrile, by the catalytic reaction in the vapor phase of a paraffin selected from propane and isobutane with molecular oxygen and ammonia and optionally a gaseous diluent, by catalytic contact of the foregoing reactants in a reaction zone with a catalyst, the feed to said reaction zone containing a mole ratio of said paraffin to NH_3 in the range from 2.5 to 16 and a mole ratio of said paraffin to O_2 in the range from 1 to 10, said catalyst having the elements and the proportions indicated by the empirical formula:

$$VSb_mA_aD_dO_x$$

where

A is one or more Ti, Sn, Fe, Cr, Ga

D is one or more Li, Mg, Ca, Sr, Ba, Co, Ni, Zn, Ge, Nb, Zr, Mo, W, Cu, Te, Ta, Se, Bi, Ce, In, As, B, Mn and

m is 0.8–4

a is 0.01–2

d is 0–2

x is determined by the oxidation state of the cations present, which catalyst has been heated at a calcination temperature of at least 780° C.

5,008,428

INTEGRATED PROCESS FOR THE PRODUCTION OF AMINOACETONITRILES

Martin B. Sherwin, Potomac, and Jow-Lih Su, Silver Spring, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Oct. 26, 1989, Ser. No. 425,438

The portion of the term of this patent subsequent to Jan. 23, 2007, has been disclaimed.

Int. Cl.[5] C07C *253/30*

U.S. Cl. 558—346 **20 Claims**

1. An improved process for the production of aminoacetonitriles prepared by

(a) contacting in a reactive absorber, under reactive conditions hydrogen cyanide, formaldehyde, and an additional nitrogen source,

(b) scrubbing the reaction products from (a) supra with a pH-controlled, aqueous scrubbing solution to form an aminoacetonitrile product, and

(c) recovering the product,

wherein the improvement comprises:

using as a source of hydrogen cyanide in step (a) the direct unpurified reactor product stream of a hydrogen cyanide production process comprising a gaseous mixture of hydrogen cyanide and ammonia, using as a source of formaldehyde in step (a) the direct unpurified reactor product stream of a formaldehyde production process comprising a gaseous mixture of formaldehyde and water using as an additional nitrogen source a composition represented by the formula

wherein R_1 and R_2 are each independently selected from alkyl, alkene, cycloalkyl groups, their amine substituted derivatives, and hydrogen.

5,008,429

PROCESS FOR INDUSTRIAL APPLICATION OF KNOEVENAGEL SYNTHESIS

Manfred Kaufhold, and Josef Metz, both of Marl, Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Dec. 6, 1989, Ser. No. 446,601

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1989, 3908998

Int. Cl.[5] C07C *253/30*

U.S. Cl. 558—374 7 Claims

1. In a Knoevenagel synthesis involving reaction of cyanoacetic acid with a ketone followed by decarboxylation in one step with a Knoevenagel synthesis catalyst, the improvement comprising adding in portions 1–10 moles of acetic acid in solution with said cyanoacetic acid per mole of ketone, to the ketone and catalyst at about 100–160° C., wherein the addition of said portions produced a controlled even flow of CO_2 waste gas.

5,008,430

MERCAPTOPYRENES, PREPARATION THEREOF AND USE THEREOF FOR THE PREPARATION OF CHARGE TRANSFER COMPLEXES

Gerhard Heywang, Bergisch Gladbach, and Friedrich Jonas, Aachen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 10, 1989, Ser. No. 335,902

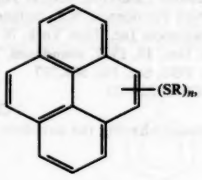
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1988, 3814534

Int. Cl.[5] C07C *321/28*

U.S. Cl. 558—396 1 Claim

1. The mercaptopyrene of the formula

(I)



wherein

n is 4 and

R is C_1–C_{22}-alkyl, benzyl or phenyl or C_1–C_{22}-alkyl, benzyl or phenyl substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen.

5,008,431

BENZOPHENONE DERIVATIVE

Yutaka Akasaki; Katsumi Nukada, and Katsuhiro Sato, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1989, Ser. No. 436,620

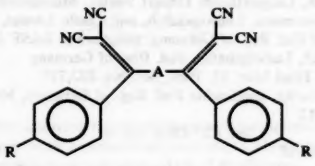
Claims priority, application Japan, Nov. 16, 1988, 63-287617

Int. Cl.[5] C07C *255/01*

U.S. Cl. 558—402 2 Claims

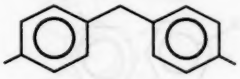
1. A benzophenone derivative represented by formula (I):

(I)

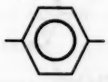


wherein A represents one of the following structural formulas (a), (b) or (c),

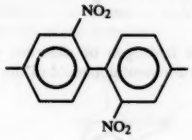
(a)



(b)



(c)



and R represents an alkyl group having 1 to 8 carbon atoms or a nitro group.

5,008,432

PRODUCTION OF MERCAPTO COMPOUNDS

John S. Roberts, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 11, 1985, Ser. No. 754,058

Int. Cl.[5] C07C *319/04, 323/03, 323/41, 323/60*

U.S. Cl. 558—436 5 Claims

1. A continuous process for the production of mercapto-substituted compounds which comprises passing a mixture of hydrogen sulfide and at least one olefinically unsaturated compound in which the double bond is conjugated with an activating group selected from the group consisting of carbonyl, carboxyl, carboxylate, carboxamide, nitrile, nitro and sulfoxide through a reaction zone comprising a bed of magnesium oxide catalyst which optionally contains silica or other suitable binding agent under reaction conditions which produce saturated sulfur compounds and separating excess hydrogen sulfide from the product mixture removed from said reaction zone.

5,008,433

2-HYDROXY-3-(4-METHOXYPHENYL)-3-(2-AMINOPHENYLTHIO)PROPIONIC ACID, 8'-PHENYLMENTHYL ESTER, ESPECIALLY FOR DILTIAZEM

James T. Palmer, Livermore, Calif., assignor to Marion Laboratories, Inc., Kansas City, Mo.

Division of Ser. No. 195,708, May 18, 1988. This application Apr. 6, 1990, Ser. No. 505,493

Int. Cl.[5] C07C *323/36*

U.S. Cl. 560—17 2 Claims

1. A (2*, 3*)-2-hydroxy-3-(4-methoxyphenyl)-3-(2-aminophenylthio)-propionic acid, (*)-8'-phenylmenthyl ester.

5,008,434

PROCESS FOR THE PREPARATION OF METHYL (+)-(2S,3S)-3-[(2-AMINOPHENYL)THIO]-2-HYDROXY-3-(4-METHOXYPHENYL)-PROPIONATES

Guy Rossey, Voisins le Bretonneux; Antonio Ugolini, Le Pecq; Isaac Chekroun, Pinay; Abkar Vartanian, Meulan, and Alexander Wick, St Nom la Breteche, all of France, assignors to Synthelabo, Paris, France

Filed Apr. 18, 1989, Ser. No. 339,979

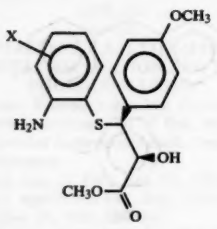
Claims priority, application France, Apr. 19, 1988, 88 05132

Int. Cl.[5] C07C *67/30, 323/09*

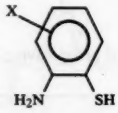
U.S. Cl. 560—17 3 Claims

1. A process for the preparation of a methyl (+)-(2S,3S)-3-

[(2-aminophenyl)thio]-2-hydroxy-3(4-methoxyphenyl)propionate of the formula (I):



in which X denotes hydrogen or chlorine, which process comprises reacting a 2-aminothiophenol of the formula (II):



in which X is as defined above, with methyl (−)-(2R,3S)2,3-epoxy-3-(4-methoxyphenyl)propionate, in a 1,2-dichloroethane solvent, at reflux temperature and under an inert atmosphere.

5,008,435

PREPARATION OF URETHANES

Kuo-Liang Loh; Puh Shieh, both of Hsinchu; Y. S. Chao, Kao-Hsiung, and Tsu-Kung Chuang, Hsinchu, all of China, assignors to Industrial Technology Research Institute, Taiwan

Filed Nov. 22, 1988, Ser. No. 275,261

Int. Cl.[5] C07C *261/00*

U.S. Cl. 560—24 **14 Claims**

1. A process for producing urethanes, which comprises reacting an organic hydroxyl group containing compound from the group consisting essentially of compounds having at least one aliphatic alcoholically bound hydroxyl group and having 1–20 carbon atoms, and compounds having at least one phenolically bound hydroxyl group and having 6–20 carbon atoms, and carbon monoxide, with an organic nitro group containing compound in the presence of a non-noble metal catalyst system consisting essentially of a copper catalyst.

5,008,436

UREA-CONTAINING (METH) ACRYLIC ACID DERIVATIVES OF TRIISOCYANATES

Michael Müller, Bergisch-Gladbach; Wolfgang Podszun, and Jens Winkel, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

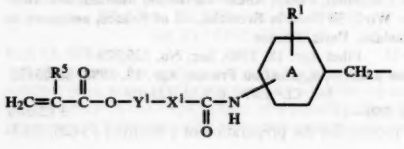
Filed May 1, 1990, Ser. No. 517,261

Claims priority, application Fed. Rep. of Germany, May 27, 1989, 3917320

Int. Cl.[5] C07C *269/00*

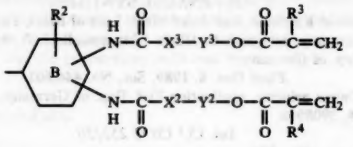
U.S. Cl. 560—26 **8 Claims**

1. A (meth)acrylic acid derivative of a triisocyanate of the formula



(I)

-continued



wherein

R^1 and R^2 are identical or different and stand for hydrogen or a lower alkyl radical,

R^3, R^4 and R^5 are identical or different and denote hydrogen or methyl,

Y^1 to Y^3 are identical or different and denote divalent straight-chain or branched hydrocarbon radicals of 2 to 15 carbon atoms which may optionally include 1 to 3 oxygen bridges and which may be unsubstituted or substituted by 1 to 4 additional (meth)acryloyloxy radicals,

X^1 to X^3 are identical or different and denote -NR^1- or -O-, at least one of the radicals X^1 to X^3 denoting -NR^1-, and the rings

A and B are identical or different and may be aromatic or saturated.

5,008,437

SCHIFF BASE REACTION PRODUCT OF ETHYL VANILLIN AND METHYL ANTHRANILATE AND ORGANOLEPTIC USES THEREOF

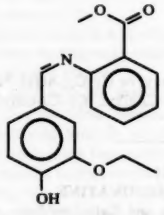
Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Point Pleasant, both of N.J.; Nicholas Calderone, Laurel Hollow, N.Y., and Ronald S. Fenn, New Providence, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 134,978, Dec. 18, 1987, abandoned. This application Sep. 27, 1990, Ser. No. 588,737

Int. Cl.[5] C07C *229/00*

U.S. Cl. 560—35 **2 Claims**

2. A schiff base reaction product having the structure:



5,008,438

ORTHO-SUBSTITUTED PHENOL ETHERS AND FUNGICIDES WHICH CONTAIN THESE COMPOUNDS

Franz Schuetz, Ludwigshafen; Siegbert Brand, Weinheim; Bernd Wenderoth, Lampertheim; Hubert Sauter, Mannheim; Eberhard Ammermann, Ludwigshafen, and Cisela Lorenz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 13, 1989, Ser. No. 322,727

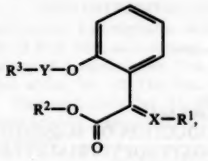
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1988, 3811012

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—55 **7 Claims**

1. Ortho-substituted phenol ethers of the general formula I

I



where

R^1 is C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio or amino which is unsubstituted or mono- or disubstituted by C_1–C_4-alkyl,

R^2 is C_1–C_4-alkyl,

R^3 is aryloxy, arylthio or arylalkoxy, the aromatic ring being unsubstituted or substituted by one or more of the following radicals: halogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_4-alkylthio, C_1–C_2-haloalkyl, aryl, aryl-C_1–C_2-alkoxy, C_1–C_4-alkylcarbonyl, mono- or di-C_1–C_4-alkyl-substituted amino; cyano, nitro,

X is CH or N, and

Y is saturated or unsaturated C_2–C_{12}-alkylene.

5,008,439

SYNTHESIS OF 2-(4-HYDROXYPHENOXY) ALKANOIC ACID ESTERS

Varadaraj Elango, and Kenneth G. Davenport, both of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, North Somerville, N.J.

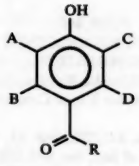
Filed Mar. 21, 1988, Ser. No. 170,711

Int. Cl.[5] C07C *69/76*

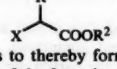
U.S. Cl. 560—61 **25 Claims**

1. A method for synthesizing 2-(4-hydroxyphenoxy)alkanoic acid esters which comprises reacting a hydroxyaromatic ketone derivative (II) of the formula

II

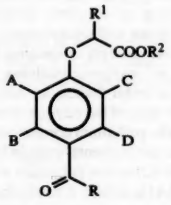


or a salt thereof; with a substituted ester of the formula



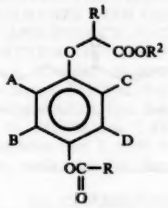
under basic conditions to thereby form a 2-(acylphenoxy)alkanoic acid ester (III) of the formula

III



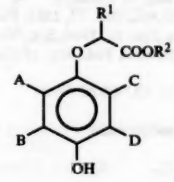
and then oxidizing the thusly formed 2-(acylphenoxy)alkanoic acid ester with a peracid or peroxide to obtain a 2-(acyloxyphenoxy)alkanoic acid ester (IV) of the formula

IV



and then transesterifying said 2-(acyloxyphenoxy)alkanoic acid ester with R^3OH/H^+ to obtain a 2-(4-hydroxyphenoxy)alkanoic acid ester (I) of the formula

I



wherein R is C_1 to C_{18} alkyl or C_6 to C_{10} aryl; and

wherein R^1 is H, phenyl or C_1 to C_{18} alkyl; and

wherein R^2 and R^3 are independently C_1 to C_{18} alkyl or aryl; and

wherein A, B, C and D are independently H, X, CN, C_1 to C_{18} alkyl, or C_6 to C_{10} aryl; and X is F, Cl, Br, I or a sulfonic ester.

5,008,440

HERBICIDE COMPOSITION

József Bakos; Bálint Heil; Imre Tóth; Béla Édes, all of Veszprém; István Gebhardt, Budapest; Ferenc Bihari, Budapest; Anna Durkó née Pónácz, Budapest; Gyula Eifert, Dunaharaszti; Jeno Király, Budapest; Éva Konok née Horváth, Budapest; László Lukács, Budapest; Ágnes Mészáros née Szekrényesi, Budapest; Béla Radvány, Budapest, and Lajos Sárosi, Budapest, all of Hungary, assignors to Budapesti Vegyimuvek, Budapest, Hungary

Filed Dec. 21, 1989, Ser. No. 454,775

Claims priority, application Hungary, Dec. 27, 1988, 6609/88

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—65 **6 Claims**

1. (S)-1'-Methoxycarbonylethyl 2-bromo-5-(2-chloro-4-trifluoromethylphenoxy)benzoate.

5,008,441

CAFFEIC ACID ESTERS AND METHODS OF PRODUCING AND USING SAME

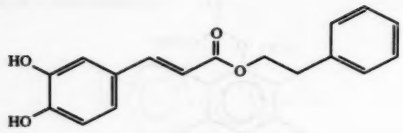
Koji Nakanishi; Eugene M. Oltz, both of New York, N.Y., and Dezider Grunberger, Teaneck, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of Ser. No. 81,649, Aug. 4, 1987, abandoned. This application Jun. 20, 1989, Ser. No. 369,060

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—75 **21 Claims**

1. A purified compound having the structure:



5,008,442

SURFACE-ACTIVE COMPOUNDS ON THE BASIS OF ARYLATED FATTY SUBSTANCES AND THEIR USE

Heinz Uhrig, Steinbach/Taunus; Klaus Ehl, Frankfurt am Main, and Reinhold Deubel, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 565,906, Dec. 27, 1983, Pat. No. 4,597,906.
This application Apr. 21, 1986, Ser. No. 854,339
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949694
Int. Cl.[5] C07C *69/34*
U.S. Cl. 560—149 8 Claims

1. A compound of the formula

$$A[(Y—O)_x—Y—Z]_m$$

in which A is the radical of an arylated fatty alcohol, Y are identical or different groups of the formulae

$$—CH_2—CH_2— \text{ or } —CH_2—CH(CH_3)—,$$

Z are identical or different radicals of the formulae —O—CO—CH=CH—COOM and —O—CO—CH_2—CH(SO_3M-)—COOM,
in which
M is a cation,
x is an integer from 1 to 150 and
m is a number from 1 to 7.

5,008,443

PROCESS FOR THE PREPARATION OF NITRAMINE-CONTAINING HOMOPOLYMERS AND CO-POLYMERS

Roger W. Day, Meriden, and Rahim Hani, Cheshire, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 270,977, Nov. 14, 1988, Pat. No. 4,916,206.
This application Sep. 25, 1989, Ser. No. 411,380
Int. Cl.[5] C07C *67/08*
U.S. Cl. 560—169 6 Claims

1. A process for producing a nitramine-containing polymer which comprises the steps of:

(a) reacting a nitramine-containing dicarboxylic acid monomer selected from the group consisting of 4,7-dinitraza-1,10-decanedioic acid (DNDA); 5-methyl-4,7-dinitraza-1,10-decanedioic acid (MDNDA); 4-nitraza-1,7-heptanedioic acid (NHDA); 4,8-dinitraza-1,11-undecanedioic acid (DNUDA), and combinations thereof, with a diol monomer selected from the group consisting of ethylene glycol, propylene glycol, 1,4-butane diol, 1,6-hexane diol, diethylene glycol and combinations thereof, in the presence of an acid catalyst by a melt polymerization reaction, the molar ratio of said diol monomer being either equimolar or a molar excess of said diol monomer relative to said nitramine-containing dicarboxylic acid monomer, said reaction being effected at a reaction temperature of between about 60° C. and about 150° C. and a reaction pressure which is either atmospheric or subatmospheric ranging between about 0.001 mm of Hg and about 600 mm. of Hg., to form said nitramine-containing polymer, and

(b) removing by-product water during the course of the reaction.

5,008,444

PROCESS FOR THE PRODUCTION OF SUBSTITUTED ACRYLOYLOXYHYDROXYPROPYLTRIALKYLAMMONIUM CHLORIDE

William G. Chiang, Fayetteville; Richard M. Jobbins, Marcellus, and Michael P. Popule, Syracuse, all of N.Y., assignors to Polypure, Inc., Solvay, N.Y.

Continuation-in-part of Ser. No. 278,297, Nov. 30, 1988, abandoned, and a continuation-in-part of Ser. No. 278,299, Nov. 30, 1988, abandoned, and a continuation-in-part of Ser. No. 278,300, Nov. 30, 1988, abandoned. This application Dec. 26, 1989, Ser. No. 456,340
Int. Cl.[5] C07C *69/52*
U.S. Cl. 560—222 29 Claims

1. A process for preparing a 3-(R)acryloyloxy-2-hydroxypropyltrialkylammonium halide monomer comprising:

reacting the halohydroxypropyl ester of an acid of the formula CH_2=C(R)COOH wherein R is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms with from 0.05 to 2.0 moles of a trialkylamine per mole of halohydroxypropyl ester at from about 25° to about 70° C. for a time sufficient to form 3-(R) acryloyloxy-2-hydrocypropyltrialkylammonium halide and its isomer, 2-(R)acryloylocy-3-hydroxypropyltrialkylammonium halide, wherein said reaction occurs in from about 35 85% of a non-solvent for said 3-(R)acryloyloxy-2-hydroxypropyltri-alkylammonium halide and its isomer precipitating the halide monomer as the reaction proceeds.

5,008,445

PROCESS FOR THE PRODUCTION OF GLYCOL MONOESTERS

Nobuaki Shimizu, and Hiroaki Kezuka, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Continuation of Ser. No. 821,690, Jan. 23, 1986, abandoned, Continuation-in-part of Ser. No. 698,319, Feb. 5, 1985, abandoned. This application Jun. 5, 1987, Ser. No. 59,153
Claims priority, application Japan, Feb. 10, 1984, 59-24127; Dec. 12, 1984, 59-260790
Int. Cl.[5] C07C *67/055, 69/16, 69/28*
U.S. Cl. 560—243 26 Claims

1. A process for producing glycol monoesters using a catalyst which is regenerated, comprising

(a) reacting at least one carboxylic acid selected from the group consisting of acetic acid, propionic acid, butyric acid and isobutyric acid; at least one olefin selected from the group consisting of ethylene, propylene, butene-1, butene-2, cyclopentene and cyclohexene; and oxygen, in the presence of said catalyst containing (A) a palladium component, (B) an oxygen-containing nitrogen compound, and (C) a metal halide as major constituents, wherein the molar ratio of the oxygen-containing nitrogen compound (B) to the palladium component (A) is from 0.5 to less than 2.0 and the elemental ratio of the halogen atom in the metal halide (C) to the palladium atom in the palladium component (A) is at least 1, to produce glycol monoester; and

(b) regenerating said catalyst by reduction with hydrogen and reusing the catalyst for step (a) reaction to produce glycol monoester.

5,008,446

PREPARATION OF PHENOXY-SUBSTITUTED ESTERS AND INTERMEDIATES THEREFOR

Guenter Schulz, Ludwigshafen, and Hubert Sauter, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

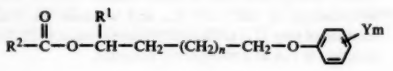
Division of Ser. No. 129,710, Dec. 7, 1987, Pat. No. 4,870,205. This application Jun. 13, 1989, Ser. No. 365,559

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1986, 3642632

Int. Cl.[5] C07C *67/02*

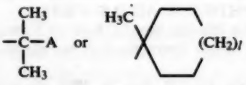
U.S. Cl. 560—254 6 Claims

1. A process for the preparation of a compound of the formula I

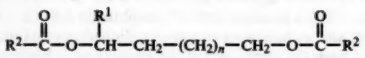


I

where R^1 is

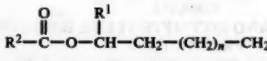


where A is C_1–C_4-alkyl, phenyl or C_7–C_{12}-aralkyl and l is 0 or 1, R^2 is C_1–C_4-alkyl, n is 0, 1, 2 or 3, m is 1, 2 or 3 and Y is hydrogen, fluorine, chlorine, bromine, C_1–C_3-alkyl, C_1–C_3-alkoxy, trifluoromethyl, phenyl or phenoxy, and, when m is greater than 1, the individual atoms or groups Y are identical or different, wherein, in a first stage, a diester of the formula II



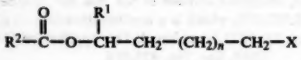
II

is hydrolyzed with one equivalent of an aqueous alkali metal hydroxide to give the alcohol of the formula IIIa



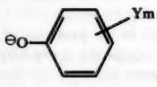
IIIa

in a second stage this alcohol is converted with a halogenating agent or a sulfonyl chloride or bromide into a compound of the formula IIIb



IIIb

where X is substituted as a nucleophilically displaceable leaving group, and then, in a third stage, the compound IIIb is reacted with a phenolate of the formula IV



IV

where Y and m have the abovementioned meanings, in the presence of an aprotic solvent to give compound I.

5,008,447

PROCESS FOR THE PREPARATION OF POLYURETHANES WITH LIQUID CRYSTAL PROPERTIES AND DIISOCYANATES SUITABLE FOR CARRYING OUT THE PROCESS

Werner Mormann, Kreuztal; Barbara Brahm, and Martin Brahm, both of Siegen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

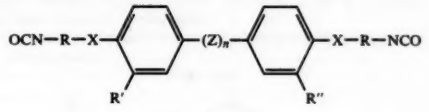
Division of Ser. No. 241,445, Sep. 7, 1988, Pat. No. 4,895,920. This application Nov. 7, 1989, Ser. No. 433,636

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1987, 3730985

Int. Cl.[5] C07C *249/00*

U.S. Cl. 560—355 1 Claim

1. An organic diisocyanate having the formula

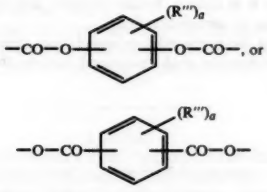


wherein

R is an alkylene group of 2 to 11 carbon atoms;

X is CO—O or O—CO;

Z is N=N, CH=CH, CO—O,



R′, R″, and R‴ are independently hydrogen, Cl, Br, NO_2, C_1–C_{20} alkyl, C_1–C_{20} alkoxy, C_1–C_{20} alkoxycarbonyl, or C_1–C_4 branched alkyl;

a is 1, 2, or 3; and

n is 0 or 1.

5,008,448

PREPARATION OF 2-(CHLORO, BROMO OR NITRO)-4-(ALKYL-SULFONYLK)BENZOIC ACIDS AND INTERMEDIATES

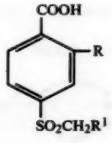
Richard W. Brown, Richmond, Calif., assignor to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 280,787, Dec. 7, 1988, abandoned. This application Jan. 25, 1990, Ser. No. 470,009

Int. Cl.[5] C07C *147/107*

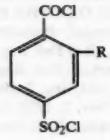
U.S. Cl. 562—429 5 Claims

1. A process for preparing 2-(chloro, bromo or nitro)-4-(alkysulfonyl) benzoic acid compounds having the structural formula

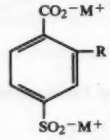


wherein R is chloro, bromo or nitro and R^1 is hydrogen or C_1–C_3 alkyl, comprising

(1) reacting a compound having the structural formula

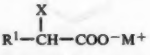


wherein R is as defined with a reducing agent along with a base having a sodium, potassium or ammonium cation (M^{30}) in an aqueous medium to prepare a compound having the structural formula

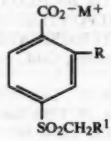


wherein R is chloro, bromo or nitro and M is sodium, potassium or ammonium and

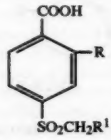
(2) reacting the prepared compound from step (1) with an α-halocarboxylic acid compound having the structural formula



wherein X is a chloro, bromo or iodo; R^1 is hydrogen or C_1–C_3 alkyl; and M is sodium, potassium or ammonium, to prepare a benzoic acid compound having the structural formula



wherein M, R and R^1 are as defined, and finally acidifying the compound to prepare the desired product having the structural formula



wherein R and R^1 are as defined.

5,008,449

METHOD OF SYNTHESIS OF HYDROXY-SUBSTITUTED-4-ALKOXYPHENYLACETIC ACIDS

Kenner C. Rice, Bethesda, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 3, 1989, Ser. No. 318,590
Int. Cl.[5] C07C *65/01*
U.S. Cl. 562—478 **5 Claims**

1. A method of synthesizing 3-hydroxy-4-alkoxyphenylacetic acid comprising the following steps:

(I) reacting 4-alkoxyphenylacetic acid with bromine to produce 3-bromo-4-alkoxyphenylacetic acid; and

(II) reacting said 3-bromo-4-alkoxyphenylacetic acid with water, strong base and a water-soluble copper salt at a temperature of 100°–120° C., and wherein the reaction mixture of step II is sufficiently concentrated such that the reaction is run at atmospheric pressure.

5,008,450

PROCESS FOR EXCHANGING DISPERSING MEDIUM OF TEREPHTHALIC ACID SLURRY

Ryoichi Yamamoto, and Hiroshi Suzuki, both of Yamaguchi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 373,674, Jun. 28, 1989, abandoned, which is a continuation of Ser. No. 279,085, Dec. 2, 1988, abandoned. This application Dec. 14, 1989, Ser. No. 449,047
Claims priority, application Japan, Dec. 17, 1987, 62-319889
Int. Cl.[5] C07C *51/42*
U.S. Cl. 562—485 **15 Claims**

1. A process for exchanging a dispersing medium of a terephthalic acid slurry, which comprises introducing an aliphatic carboxylic acid slurry of terephthalic acid into a multi-stage column at the upper part thereof and water at the lower part thereof to form an upflowing stream of water in the multi-stage column, while a sedimentation of terephthalic acid particles is effected, and withdrawing an aqueous aliphatic carboxylic acid solution from the upper part of the multi-stage column and an aqueous slurry of terephthalic acid from the lower part of the multi-stage column.

5,008,451

METHYLENE AND OXYMETHYLENE BIS-ESTER PRODUCTION

Seymour J. Lapporte, Orinda, and William G. Toland, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 400,817, Jul. 22, 1982, abandoned, which is a continuation of Ser. No. 890,560, Mar. 20, 1978, abandoned, which is a continuation of Ser. No. 575,309, May 7, 1975, abandoned, which is a division of Ser. No. 398,732, Sep. 19, 1973, Pat. No. 3,927,078, which is a continuation-in-part of Ser. No. 282,623, Aug. 21, 1972, abandoned. This application Oct. 27, 1989, Ser. No. 428,816
Int. Cl.[5] C07C *51/56*
U.S. Cl. 562—891 **19 Claims**

1. A process for producing carboxylic acid anhydrides by reacting, in the fluid phase, a carboxylic acid ester of the formula $R^2CO_2R^1$, wherein R^1 is alkyl of 1 to 10 carbon atoms and R^2 is hydrogen, alkyl of 1 to 10 carbon atoms, phenyl, alkylphenyl of 7 to 10 carbon atoms or phenylalkyl of 7 to 10 carbon atoms, and carbon monoxide in the presence of catalytic amounts of a catalyst system consisting essentially of a rhodium compound, an iodide promoter and a proton donor, at a temperature of from about 50° C. to 300° C. and an initial pressure of from about 1 atmosphere to about 100 atmospheres, under substantially anhydrous reaction conditions.

5,008,452

AMINOETHYL OXIMES

Jan V. Dijk, and Jenkin E. Davies, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

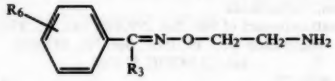
Continuation of Ser. No. 600,808, Apr. 16, 1984, abandoned, which is a continuation of Ser. No. 171,695, Jul. 24, 1980, abandoned, which is a division of Ser. No. 875,433, Feb. 6, 1978, Pat. No. 4,235,913, which is a division of Ser. No. 639,571, Dec. 10, 1975, Pat. No. 4,192,818, which is a division of Ser. No. 517,519, Oct. 24, 1974, Pat. No. 3,937,841, which is a division of Ser. No. 279,971, Aug. 11, 1972, abandoned, which is a division of Ser. No. 715,571, Mar. 25, 1968, Pat. No. 3,692,835. This application Dec. 20, 1989, Ser. No. 814,019

Claims priority, application Netherlands, Apr. 5, 1967, 6704810; Dec. 14, 1967, 6717001

Int. Cl.[5] C07C *249/04*

U.S. Cl. 564—256 6 Claims

1. A compound of the formula:



or salts thereof with pharmaceutically acceptable acids wherein R_3 is selected from the group consisting of alkoxy alkyl and alkylthio alkyl each having up to eight carbon atoms, and R_6 is a hydrogen atom or a halogen atom, wherein when R_6 is a chlorine atom, R_3 cannot be ethoxybutyl, methoxypentyl, or ethoxypentyl, and when R_6 is a bromine atom, R_3 cannot be methoxybutyl.

5,008,453

AROMATIC DIIMINES

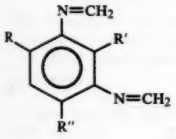
Christopher J. Nalepa; J. Kenneth Presswood, and Gordon G. Knapp, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Apr. 14, 1989, Ser. No. 338,986

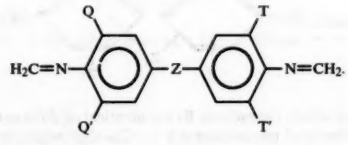
Int. Cl.[5] C07C *251/16*

U.S. Cl. 564—271 8 Claims

1. An aromatic diimine having one or two benzene rings and two ar-imino substituents corresponding to the formula



or



wherein R, R′, and R″ are independently selected from alkyl groups containing 1–6 carbons, Q, Q′, T, and T′ are independently selected from alkyl groups containing 1–6 carbons and Z is an alkylidene group containing 1–3 carbons.

5,008,454

PROPANEDIOL DERIVATIVES, THEIR PRODUCTION AND USE

Keizo Inoue, Tokyo; Hiroaki Nomura, Takatsuki, and Akihiro Tasaka, Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 227,531, Aug. 3, 1988, abandoned. This application Mar. 12, 1990, Ser. No. 492,330

Claims priority, application Japan, Aug. 18, 1987, 62-204795

Int. Cl.[5] C07C *215/40*

U.S. Cl. 564—294 8 Claims

1. A compound of the formula:

$$R^1—OCH_2CH_2CH_2O—(CH_2)_n—R^2 \quad (I)$$

wherein R^1 stands for the alkyl group having 8 to 22 carbon atoms which is unsubstituted or substituted by C_{3-8} cycloalkyl, phenyl, halogen, cyano, ethynyl, oxo or C_{1-4} alkyl, C_{1-4} alkoxy, hydroxy, nitro or halogen;

R^2 stands for a quaternary ammonium group represented by the formula:

wherein R^3, R^4, and R^5 independently stand for C_{1-5} alkyl,

n denotes an integer of 3 to 10;

wherein said compound represented by the formula (I) is in the form of a pharmaceutically acceptable salt with an anion or an intramolecular salt with an anion in the molecule of said compound.

5,008,455

METHOD FOR THE PRODUCTION OF HYDROXYLAMINE DERIVATIVES

Masashi Nakajima, Takaoka; Nobuo Tomita, Tonami; Kenji Suzaki, Takaoka; Akira Kaneko, Takaoka, and Mikio Sawaki, Takaoka, all of Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 897,208, Aug. 18, 1986, abandoned. This application Dec. 6, 1989, Ser. No. 445,155

Int. Cl.[5] C07C *239/20*

U.S. Cl. 564—300 12 Claims

1. A process for the production of hydroxylamine derivatives having the general chemical formula:

$$NH_2OR^1 \quad (I)$$

comprising:

(a) reacting an ester of carboxylic acid having the general chemical formula:

$$R^2COOR^3, \quad (II)$$

wherein R^2 is a lower alkyl, with an hydroxylamine having the formula:

$$HONH_2 \quad (III)$$

to form a salt of hydroxamic acid having the general chemical formula:

$$R^2CONHO\ 1/n\ M; \quad (IV)$$

(b) reacting the resulting salt of hydroxamic acid having the formula (IV) with a compound having the general formula:

$$(R^1O)_2SO_2 \text{ or } R^1X \quad (V)$$

to form an ester of hydroxamic acid having the general formula:

$$R^2CONHOR^1; \quad (VI)$$

(c) reacting the ester of hydroxamic acid (VI) with a mineral acid in an aqueous solution of an alcohol having the formula:

$$R^3OH \quad (VII)$$

to produce hydroxylamine derivatives having the general formula (I) and an ester of carboxylic acid having the general chemical formula (II); and

(d) introducing the ester of carboxylic acid having the general chemical formula (II) into the reaction of step (a), wherein said process is carried out in aqueous solution;

R^1 is selected from the group consisting of an alkyl group, a substituted alkyl group, an alkenyl group, a substituted alkenyl group, an alkynyl group, a substituted alkynyl group, an aryl group, a substituted aryl group, an aralkyl group, a substituted aralkyl group, and salts thereof;

R^2 and R^3 are selected from the group consisting of lower alkyl groups;

M is an alkali metal or an alkali earth metal;

n is the valency of M; and

X is a nucleophilic reacting group.

5,008,456

DIAMINO COMPOUNDS, DINITRO COMPOUNDS, DIOL COMPOUNDS AND A PROCESS FOR PREPARING THE DIAMINO COMPOUNDS

Shizuo Murata; Minoru Nakayama, both of Ichihara; Kenji Furukawa, Yokosuka, and Ryuji Kobayashi, Yokohama, all of Japan, assignors to Chisso Corporation, Osaka, Japan

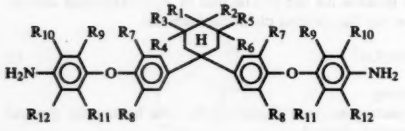
Filed Nov. 8, 1989, Ser. No. 433,116

Claims priority, application Japan, Nov. 9, 1988, 63-282679

Int. Cl.[5] C07C *211/00*

U.S. Cl. 564—322 **2 Claims**

1. A diamino compound represented by the general formula



(I)

wherein R_1–R_6 are a hydrogen atom or an alkyl group having 1 to 22 carbon atoms, respectively, and R_7–R_{12} are a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, F or Cl, respectively.

5,008,457

CHIRAL PHOSPHOLANE TRANSITION METAL CATALYSTS

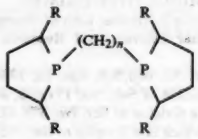
Mark J. Burk, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 17, 1990, Ser. No. 524,737

Int. Cl.[5] C07F *9/02, 9/00*

U.S. Cl. 568—12 **7 Claims**

1. A compound represented by the following formula I comprising:



I

wherein:

R is a lower alkyl, trifluoromethyl, phenyl, substituted phenyl, aralkyl or ring-substituted aralkyl; and

n is an integer having a value from 1 to 12.

5,008,458

PROCESS FOR PURIFYING CRUDE TETRABROMOBISPHENOL SULFONE BY EXTRACTION

Jeffrey E. Telschow, Tarrytown, N.Y., assignor to Akzo nv, Arnhem, Netherlands

Continuation-in-part of Ser. No. 299,495, Jan. 23, 1989. This application Dec. 19, 1989, Ser. No. 452,868

Int. Cl.[5] C07C *315/06*

U.S. Cl. 568—28 **11 Claims**

1. A process for the purification of a crude tetrabromobisphenol S composition which comprises heating the composition in the presence of a quantity of substantially organic, moderately polar solvent insufficient to substantially dissolve the tetrabromobisphenol S, which solvent removes impurities from the crude composition, followed by removal of the tetrabromobisphenol S from the solvent.

5,008,459

SUBSTITUTED PHENOLS AS STABILIZERS

Hans R. Meier; Samuel Evans, and Paul Dubs, all of Marly, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

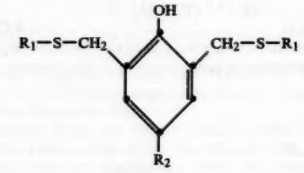
Filed Dec. 22, 1987, Ser. No. 136,686

Claims priority, application Switzerland, Dec. 24, 1986, 5235/86

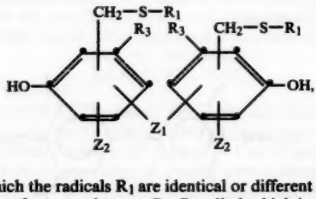
Int. Cl.[5] C07C *321/00, 323/00*

U.S. Cl. 568—46 **10 Claims**

1. A composition comprising an elastomer and at least one compound of the formulae I or/and II



(I)



(II)

in which the radicals R_1 are identical or different and independently of one another are C_1–C_{20}-alkyl which is unsubstituted or substituted by 1 or 2 hydroxyl groups or/and interrupted by —O—, or are C_1–C_4-alkylene-$COOR_2'$, C_1–C_4-alkylene-$CO—NR_2''R_4$, C_5–C_{12}-cycloalkyl, phenyl, 1-naphthyl, 2-naphthyl, C_1–C_4-alkyl-phenyl or phenyl-C_1–C_4-alkyl, R_2, R_2' and R_2'' independently of one another are C_1–C_{20}-alkyl, allyl,

methallyl, propargyl, C_5–C_{12}-cycloalkyl, phenyl or benzyl, R_3 is hydrogen, C_1–C_{20}-alkyl, C_2–C_{18}-alkenyl or halogen, R_4 is hydrogen, C_1–C_{20}-alkyl or C_2–C_{18}-alkenyl, Z_1 is —S— or —$C(Z_3)(Z_4)$— and Z_2 is hydrogen, C_1–C_{20}-alkyl or —CH_2—S—R_1, Z_3 and Z_4 independently of one another being hydrogen or methyl, with the proviso that the phenols of the formula II are free of the —CH_2—S—R_1 functional group in the m-position relative to the OH group.

5,008,460

SYNTHETIC LUBRICANTS

William E. Garwood, Haddonfield; Quang N. Le, Cherry Hill; Joosup Shim, Wenonah, and Stephen S. Wong, Medford, all of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

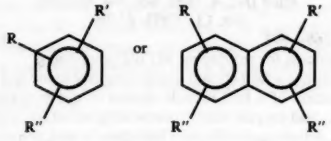
Filed May 30, 1989, Ser. No. 358,108

Int. Cl.[5] C07C *2/04*

U.S. Cl. 585—11 **20 Claims**

1. A method for manufacturing a lube base stock oil, which method comprises:

preparing a mixture consisting of (a) an alkenylaromatic hydrocarbon having the formula



(I) (II)

wherein R is the CH_2=CH— radical or the CH_2=$C(CH_3)$— radical and wherein R′ is hydrogen or the CH_2=CH— or the CH_2=$C(CH_3)$— radical and wherein R″ is individually selected from the group consisting of hydrogen and alkyl radicals having one to four carbon atoms; (b) from one to about 20 moles of an aliphatic olefin having at least about six to about forty carbon atoms per mole of alkenyl-aromatic hydrocarbon; and (c) about 0.5 to about 30 wt % of said mixture of alkenylaromatic hydrocarbon and aliphatic olefin of a ditertiaryalkyl peroxide;

maintaining said mixture at a temperature of 100° to about 200° C. for a time effective to decompose said peroxide whereby reacting said alkenylaromatic hydrocarbon with said aliphatic alpha olefin; and,

recovering an alkylaromatic base stock oil boiling above about 600° F.

5,008,461

PREPARATION OF BENZYL KETONES

Fritz Naeumann, Mannheim, and Eckhard Hickmann, Dannstadt-Schauernheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

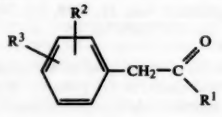
Filed Mar. 7, 1990, Ser. No. 489,690

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1989, 3910220

Int. Cl.[5] C07C *45/52*

U.S. Cl. 568—322 **6 Claims**

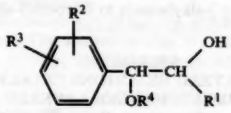
1. A process for the preparation of a benzyl ketone of the formula



(I)

where R^1 is C_1–C_8-alkyl which is unsubstituted or substituted by cycloalkyl or aryl and R^2 and R^3 are each halogen, C_1–C_4-alkyl, hydroxyl, C_1–C_4-alkoxy or C_2–C_4-methylenedioxy, which comprises:

converting a glycol monoether of the formula



(II)

where R^1, R^2 and R^3 have the abovementioned meanings and R^4 is C_1–C_8-alkyl, into said benzyl ketone with elimination of the compound R^4—OH, in the presence of a catalyst selected from the group consisting of alumina, silica, phosphates and zeolites at from 50° to 500° C. and under from 0.01 to 50 bar.

5,008,462

METHOD FOR PREPARING MONOCHLOROACETALDEHYDE TRIMER

Makoto Ishizuka, Kawaguchi, and Takashi Wakasugi, Iwaki both of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1989, Ser. No. 433,284

Claims priority, application Japan, Nov. 9, 1988, 63-282980

Int. Cl.[5] C07C *45/61, 45/63*

U.S. Cl. 568—466 **13 Claims**

1. A method of preparing a monochloroacetaldehyde trimer comprising:

(a) dissolving a raw material solution in an organic solvent, wherein said raw material solution contains at least 70% by weight monochloroacetaldehyde;

(b) cooling the solution to a temperature of 0° C. or less; and

(c) reacting the solution with concentrated sulfuric acid in an amount of 10 to 70% by weight with respect to the weight of the raw material solution.

5,008,463

PROCESS FOR THE PREPARATION OF FORMALDEHYDE

Horst-Philipp Beck, Dudweiler/Saar; Gerhard Emig, Erlangen; Günther Wiesgickl, Grosswallstadt; Karlheinz Burg, and Karl-Friedrich Mück, both of Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 21, 1990, Ser. No. 541,629

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1989, 3920811

Int. Cl.[5] C07C *45/00, 47/04*

U.S. Cl. 568—487 **9 Claims**

1. A process for the preparation of formaldehyde by dehydrogenating methanol in the presence of a catalyst at elevated temperature, which comprises carrying out the reaction at a temperature of 650° to 1050° C. with the exclusion of oxygen in the presence of at least one of the compounds aluminum oxide, alkali metal aluminate and alkaline earth metal aluminate as catalyst in a reactor whose inner wall is entirely or partly composed of aluminum oxide.

5,008,464

ANISOLE BROMINATION

Larry Filius, Muskegon, Mich., assignor to East Short Chemical Company, Muskegon, Mich.

Continuation of Ser. No. 413,886, Sep. 27, 1989, abandoned. This application May 29, 1990, Ser. No. 529,682

Int. Cl.[5] C07C *41/00*

U.S. Cl. 568—656 **12 Claims**

1. A method for making 4-bromo-3-alkylanisole comprising introducing 3-alkylanisole into a reactor having a reaction zone, establishing 3-alkylanisole as a substantially solvent-free

vapor in the reaction zone of the reactor, introducing bromine vapor to the reaction zone of the reactor from a separate source of bromine and into the presence of the vaporized 3-alkylanisole to form mixed vapors, maintaining the mixed vapors in a vaporized phase for a time and a temperature sufficient to convert 3-alkylanisole to 4-bromo-3-alkylanisole.

5,008,465

PROTON-CATALYZED REACTIONS CATALYZED BY HYDROGEN ION-EXCHANGED LAYERED CLAYS

James A. Ballantine, West Cross, Wales; Reginald Gregory, Camberley, England; John H. Purnell, Bishopston, Wales; John M. Thomas, Cambridge, and David J. Westlake, Woking, both of England, assignors to The British Petroleum Company p.l.c., London, England

Continuation of Ser. No. 309,984, Feb. 10, 1989, abandoned, which is a continuation of Ser. No. 191,828, May 6, 1988, abandoned, which is a continuation of Ser. No. 35,257, Apr. 2, 1987, abandoned, which is a continuation of Ser. No. 814,206, Dec. 27, 1985, abandoned, which is a division of Ser. No. 765,164, Aug. 12, 1985, Pat. No. 4,590,294, which is a continuation of Ser. No. 417,873, Sep. 14, 1982, abandoned, which is a continuation-in-part of Ser. No. 218,552, Dec. 22, 1980, abandoned. This application May 17, 1990, Ser. No. 525,295

Claims priority, application United Kingdom, Dec. 22, 1979, 7944315; May 17, 1980, 8016384; Jul. 5, 1980, 8022101; Jul. 5, 1980, 8022102; Aug. 9, 1980, 8026028

Int. Cl.[5] C07C *41/06*

U.S. Cl. 568—697 **6 Claims**

1. In a process for preparing an ether by reacting an alcohol with an olefin at a temperature of up to 300° C. in the presence of an effective amount of a catalyst the improvement comprising using as said catalyst a hydrogen ion-exchanged layered clay which has been prepared by

(a) contacting a layered clay containing exchangeable cations with an acid at ion-exchange conditions at or near ambient temperature up to about 35° C. to produce the hydrogen ion-exchanged layered clay and

(b) thereafter washing the hydrogen ion-exchanged layered clay until all extraneous acid and cations are removed.

5,008,466

PROCESS FOR THE ISOMERIZATION OF ALKENES HAVING A TERMINAL DOUBLE BOND TO GIVE ALKENES HAVING AN INTERNAL DOUBLE BOND

Bernhard Schleppinghoff; Hans-Dieter Köhler; Christian Gabel, and Hans-Volker Scheef, all of Dormagen, Fed. Rep. of Germany, assignors to EC Erdolchemie GmbH, Cologne, Fed. Rep. of Germany

Filed Apr. 12, 1989, Ser. No. 336,926

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1988, 3812683

Int. Cl.[5] C07C *41/00, 43/00, 5/00*

U.S. Cl. 568—697 **20 Claims**

1. A process for the isomerization of alkenes having a terminal double bond to give alkenes having an internal double bond by treating alkenes having a terminal double bond or hydrocarbon feedstocks containing alkenes having a terminal double bond over catalysts containing hydrogenation-active metals in the presence of hydrogen, characterized in that the treatment is carried out in the liquid phase at a temperature from 0° to 120° C. on a macroporous or gel acid cation exchanger in the H^+ form which contains 0.001 to 10 g of one or more metals of the VIth and/or VIIth and/or VIIIth sub-group of the periodic system of the elements (Medeleev) in elementary form per liter of dry cation exchanger and which has a degree of crosslinking of 2 to 65% and a specific surface area of 5 to 750 m^2/g of dry exchange resin.

18. The process for carrying out at the same time

(a) the isomerization of alkenes having a terminal double bond to give alkenes having an internal double bond in accordance with claim 1,

(b) the selective hydrogenation of highly unsaturated accompanying compounds in hydrocarbon feed materials, and

(c) the catalysed etherification of isoalkanes in said feed materials,

characterized in that, in the process according to claim 1, said feed materials containing highly unsaturated accompanying compounds and containing said isoalkenes are used and, in addition, hydrogen is employed in a proportion of 100 to 200% of the proportion required by stoichiometry for the selective hydrogenation of the highly unsaturated accompanying compounds, and alkanols having 1 to 4 C atoms are employed in a proportion of 0.7 to 4 moles per mole of the isoalkenes.

5,008,467

PROCESS FOR DIRECT ETHERIFICATION OF A DEHYDROGENATED EFFLUENT

Bipin V. Vora, Darien, and Norman H. Scott, Arlington Heights, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 4, 1989, Ser. No. 445,503

Int. Cl.[5] C07L *41/06*

U.S. Cl. 568—697 **18 Claims**

1. A process for producing MTBE comprising:

(a) charging a feed stream comprising isobutane and at least a portion of a first recycle stream to a dehydrogenation zone, said recycle stream comprising isobutane and hydrogen, dehydrogenating said isobutane in said dehydrogenation zone, and recovering a first effluent stream comprising C_4 and lighter hydrocarbons, and hydrogen, said C_4 hydrocarbons of said first effluent stream including isobutene and isobutane;

(b) passing said first effluent to an etherification zone without separation at inlet conditions that will maintain at least a portion of said C_4 hydrocarbons in vapor phase;

(c) contacting isobutene from said first effluent stream with methanol in an etherification zone at etherification conditions and in the presence of an etherification catalyst;

(d) recovering a second effluent stream from said etherification zone having less than 5 mol. % isobutene and comprising MTBE, methanol and C_4 and lighter boiling hydrocarbons and discharging isobutane and hydrogen from said etherification zone;

(e) separating C_4 and lighter boiling hydrocarbons from said second effluent stream in a first separation zone and recovering an MTBE effluent stream essentially free of C_4 hydrocarbons, and a second recycle stream comprising C_4 hydrocarbons and methanol;

(f) combining at least a portion of said second recycle stream with said isobutane and hydrogen of said etherification zone to generate a third recycle stream; and

(g) charging said third recycle stream to a methanol removal zone and removing methanol from at least a portion of said third recycle stream to provide said first recycle stream.

5,008,468

ACID CATALYZED PROCESS

David L. King, Mountain View; Michael D. Cooper, San Jose, and Michael A. Faber, Palo Alto, all of Calif., assignors to Catalytica, Inc., Mountain View, Calif.

Continuation of Ser. No. 852,781, Apr. 16, 1986, Pat. No. 4,868,343. This application Aug. 21, 1989, Ser. No. 384,251

Int. Cl.[5] C07C *41/06*

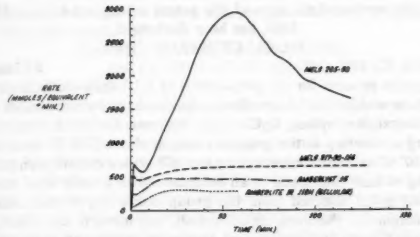
U.S. Cl. 568—697 **12 Claims**

1. In a process for the conversion of an olefin into an oligomer or polymer of said olefin, in the presence of a solid acid catalyst comprising sulfonic acid groups covalently bonded to a polymeric chain, the improvement comprising increasing the rate of conversion, on an equivalent sulfonic acid basis, by

providing, as said polymeric chain a compound represented by the formula:

$$M(O_3ZO_xR)n$$

wherein M is a tetravalent metal ion; Z is a pentavalent atom,



selected from the group consisting of elements of Group V of the Periodic Table of the Elements having an atomic weight greater than 30; x varies from 0 to 1; R is selected from the group consisting of organo radicals and mixtures of hydrogen radicals and organo radicals; and n varies from 1 and 2; provided that n is 1 when R is terminated with a tri- or tetraoxy pentavalent atom.

5,008,469

PROCESS FOR PRODUCING TETRABROMOBISPHENOL A

Hisao Eguchi; Masashige Kubo; Koji Kunimoto, all of Tokuyama; Sadami Shimizu, Tokyo; Masakatsu Sato, Matsudo, and Hanzo Tamabayashi, Tokuyama, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Jan. 25, 1990, Ser. No. 470,212

Claims priority, application Japan, Jan. 26, 1989, 1-15066; Jan. 27, 1989, 1-16296; Dec. 20, 1989, 1-328168; Jan. 11, 1990, 2-2576

Int. Cl.[5] C07C *39/367, 37/18*

U.S. Cl. 568—722 **9 Claims**

1. A process for producing tetrabromobisphenol A, which comprises brominating bisphenol A with bromine in methanol, at a temperature of between 0–50° C., wherein the substrate concentration of bisphenol A to methanol is at most 20 wt/vol%.

5,008,470

PROCESS FOR PREPARING A BISPHENOL

Joseph B. Powell, and Christopher W. Uzelmeier, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 30, 1989, Ser. No. 444,580

Int. Cl.[5] C07C *37/20, 39/16*

U.S. Cl. 568—727 **13 Claims**

1. A process for the production of a bisphenol comprising the steps of:

(a) reacting a carbonyl compound selected from the group consisting of ketones and a aldehydes with a stoichiometric excess of a phenolic compound in the presence of an effective amount of an acid ion exchange resin catalyst to produce a reaction product mixture comprising a bisphenol;

(b) contacting the reaction product mixture containing the bisphenol with an inorganic oxide adsorbent selected from the group consisting of alumina, zirconium oxide, titanium oxide and tin oxide under conditions effective to reduce the acidity of the reaction product mixture; and

(c) recovering bisphenol from the thus treated reaction product mixture.

5,008,471

PROCESS FOR THE PREPARATION OF ROOPEROL

George L. Wenteler, Pretoria; Karl H. Pegel, Durban; Siegfried Drews, Pietermaritzburg, and Hans Kündig, Witpoort/Midrand, all of South Africa, assignors to Rooperol (N.A.), Kralendikj, Netherlands

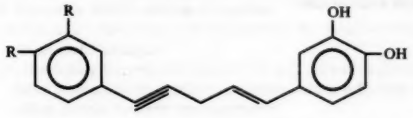
Continuation-in-part of Ser. No. 875,398, Jun. 17, 1986, abandoned. This application Jun. 13, 1989, Ser. No. 365,751

Claims priority, application South Africa, Jun. 19, 1985, 84/4640

Int. Cl.[5] C07C *39/215, 37/11*

U.S. Cl. 568—729 **1 Claim**

1. As a process for preparing a compound of the formula



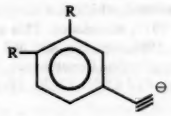
in which both Rs are H or —OH comprising the steps:

a. of treating the ethyl ester of caffeic acid with a trialkylsilyl chloride at ambient conditions in equimolar proportions in the presence of a base;

b. of reduction of the resulting product with an aluminium hydride reagent at sub-zero temperature and equimolar proportions to yield the corresponding allylic alcohol;

c. of halogenation of this allylic alcohol with thionyl chloride or a phosphorus trihalide to yield the corresponding allyl halide;

d. of coupling this allyl halide with the silyl ether of compound of the formula



in refluxing ether solutions; and

e. of hydrolysis of this coupled product with tetra alkyl ammonium flouride at ambient conditions and of equimolar proportions.

5,008,472

PREPARATION OF 4,4″-DIHYDROXYTERPHENYL

Ulrich Eichenauer, Frankfurt am Main, Fed. Rep. of Germany, assignor to Basf Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 31, 1989, Ser. No. 400,932

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1988, 3831712

Int. Cl.[5] C07C *37/04, 39/12*

U.S. Cl. 568—730 **5 Claims**

1. A process for preparing 4,4″-dihydroxyterphenyl, which comprises:

(a) sulfonating terphenyl with a sulfonating agent selected from the group consisting of sulfuric acid, sulfur trioxide, a mixture thereof, or chlorosulfonic acid, and

(b) treating the resulting terphenyl-4,4″-disulfonic acid with an alkali metal hydroxide.

5,008,473

PROCESS FOR PURIFYING PROPANEDIOL-1,3

Norbert Breitkopf, Oberhausen; Georg Dämbkes, Dinslaken, and Hanswilhelm Bach, Duisburg, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 17, 1987, Ser. No. 98,047

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1986, 3632397

Int. Cl.[5] C07C *29/86, 31/20*

U.S. Cl. 568—868 5 Claims

1. A process for the purification of turbid propanediol-1,3, produced by hydration of acrolein with water followed by hydrogenation, said process comprising extracting said diol with cyclohexane.

5,008,474

PROCESS FOR THE MANUFACTURE OF 1-CHLORO-1,1-DIFLUOROETHANE

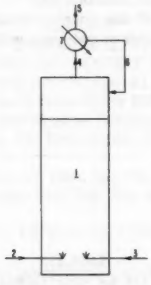
René Wairaevens; James Franklin, both of Brussels, and Jean-Marie Yernaux, Rixensart, all of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Continuation of Ser. No. 672,177, Nov. 15, 1984, abandoned, which is a continuation of Ser. No. 572,132, Jan. 19, 1984, abandoned, which is a continuation of Ser. No. 407,078, Aug. 11, 1982, abandoned, which is a continuation of Ser. No. 268,702, Jun. 1, 1981, abandoned, which is a continuation of Ser. No. 824,320, Aug. 12, 1977, abandoned. This application Mar. 9, 1990, Ser. No. 491,065

Claims priority, application Luxembourg, Sep. 22, 1976, 75857

Int. Cl.[5] C07C *17/20, 19/02*

U.S. Cl. 570—168 27 Claims



1. Continuous process for the manufacture of 1-chloro-1,1-difluoroethane by reacting hydrogen fluoride with vinylidene chloride, wherein the reaction is carried out in a liquid medium in the presence of a hydrofluorination catalyst which is a tin compound, comprising maintaining in the liquid medium a content of at least 40 mol % of 1,1-dichloro-1-fluoroethane, no more than 30 mol % of vinylidene chloride and no more than 30 mol % of 1-chloro-1,1-difluoroethane, all relative to the total number of moles of organic compounds participating in the reaction and present in the liquid medium, while feeding into the liquid medium hydrogen fluoride and vinylidene chloride in a hydrogen fluoride/vinylidene chloride molar ratio of between 1.5 and 3.7 by continuously withdrawing 1-chloro-1,1-difluoroethane from the liquid medium.

5,008,475

GAS-PHASE FLUORINATION PROCESS

Leo E. Manzer, and V. N. Mallikarjuna Rao, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 197,222, May 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 70,826, Jul. 7, 1987, Pat. No. 4,766,260. This application Jan. 16, 1990, Ser. No. 465,402

The portion of the term of this patent subsequent to Aug. 23, 2005, has been disclaimed.

Int. Cl.[5] C07C *17/20, 19/02*

U.S. Cl. 570—168 9 Claims

1. A process for the preparation of 1,1,1-trifluorodichloroethane and/or 1,1,1,2-tetrafluorochloroethane by fluorination of a tetrahaloethylene, $C_2Cl_{4-x}F_x$, wherein x=0 to 3, comprising contacting in the gaseous phase at about 275° C. to about 450° C. said tetrahaloethylene and HF with a catalyst comprising at least one metal in an oxidation state greater than zero, said metal selected from the group consisting of chromium, manganese, rhodium, nickel, cobalt, said metal in combination with a high fluorine content aluminum-containing compound consisting essentially of aluminum and fluorine in such proportions that the fluorine content corresponds to an AlF_3 content of at least 90% by weight of the catalyst exclusive of said metal, said AlF_3 content being obtained by pretreatment of the unfluorinated catalyst with a vaporizable fluorine-containing compound.

5,008,476

PROCESS FOR THE PREPARATION OF 1,1,1,2-TETRAFLUOROETHANE

Leo E. Manzer, and V. N. Mallikarjuna Rao, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 262,298, Oct. 25, 1988, abandoned. This application Dec. 18, 1989, Ser. No. 449,407

Int. Cl.[5] C07C *17/10, 19/08, 17/20*

U.S. Cl. 570—176 20 Claims

1. In a process for preparing 1,1,1,2-tetrafluoroethane which includes the steps of

(a) reacting at least one two-carbon compound selected from the group consisting of compounds having the formula $C_2Cl_{4-x}Z_x$ and compounds having the formula $C_2Cl_{6-y}Z_y$ wherein x=0 to 4, y=0 to 6, and Z is at least one of hydrogen or fluorine and wherein the total number of fluorine atoms in the compound is ≦3, in the gaseous phase with chlorine in at least the stoichiometric amount needed to convert each of said two carbon compounds to $C_2Cl_2F_4$, and with HF, to produce a mixture comprising 1,1,1,2-tetrafluorodichloroethane, 1,1,2,2-tetrafluorodichloroethane and pentafluorochloroethane; and

(b) contacting the mixture produced in (a) in the gaseous phase with H_2 at a temperature of about 100° C. to about 350° C. in the presence of hydrogenolysis catalyst to produce a gaseous mixture comprising 1,1,1,2-tetrafluorochloroethane, unreacted 1,1,2,2-tetrafluorodichloroethane, and 1,1,1,2-tetrafluorodichloroethane, 1,1,1,2-tetrafluorochloroethane, 1,1,1-trifluoroethane, and unreacted pentafluorochloroethane, an improvement comprising:

(i) in step (a) reacting said at least one two-carbon compound with HF in excess of the stoichiometric amount needed to fluorinate each of said two-carbon compounds to $C_2Cl_2F_4$ for a time sufficient to produce a product comprising 1,1,1,2-tetrafluorodichloroethane and 1,1,2,2-tetrafluorodichloroethane, said reaction being conducted at a temperature of from about 300° C. to about 450° C. and in the presence of at least one catalyst selected from fluorinated alumina and AlF_3 which are suitable for both the isomerization of 1,1,2,2-tetrafluorodichloroethane to 1,1,1,2-tetrafluorodichloroethane and the formation of pentafluorochloroethane by disproportionation of $C_2Cl_2F_4$; and

(ii) in step (a) utilizing as said excess HF an effective amount of HF, at least about 1 mole in excess of said stoichiometric amount needed to fluorinate the two-carbon compounds to $C_2Cl_2F_4$, to inhibit said disproportionation without suppressing said isomerization.

5,008,477

DECABROMODIPHENYL ALKANE PROCESS

Saadat Hussain, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Mar. 14, 1990, Ser. No. 492,756
Int. Cl.[5] C07C 17/12, 25/18
U.S. Cl. 570—208 18 Claims

1. A process for preparing a product predominate in decabromodiphenyl alkane, having an alkyl group bridging the aromatic rings, and having an average bromine number of at least 9.0, the process comprising: forming a stirrable reaction mass by feeding molten diphenylalkane to a reaction vessel to which a bromination catalyst and bromine had been previously charged, the molten diphenylalkane being maintained under a non-oxidizing atmosphere prior to the feeding, and the bromine (i) containing about 10 ppm or less impurities, and (ii) being charged in an amount which provides from about 18 to about 30 moles of bromine per mole of diphenylalkane fed; maintaining the reaction mass at a temperature which is less than or equal to about 15° C. during the feeding; subsequent to the feeding, obtaining a reaction mass temperature within the range of from about 50° C. to about 60° C.; and recovering from the reaction mass the decabromodiphenyl alkane predominant product, wherein the alkyl group contains 1 to 10 carbon atoms.

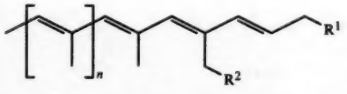
5,008,478

AGGREGATION PHEROMONES OF THE NITIDULID BEETLES *CARPOPHILUS HEMIPTERUS, CARPOPHILUS LUGUBRIS, AND CARPOPHILUS FREEMANI*

Robert J. Bartelt, East Peoria, and Patrick F. Dowd, Peoria, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 275,863, Nov. 25, 1988. This application Jul. 31, 1989, Ser. No. 387,555
Int. Cl.[5] C07C 9/00
U.S. Cl. 585—16 5 Claims

1. A substantially pure hydrocarbon or a substantially pure mixtures of hydrocarbons having the structure:



wherein R^1 and R^2 are independently selected from the group consisting of hydrogen and lower alkyl, and n is zero or one.

5,008,479

PROCESS FOR PRODUCTION OF 2,6-DIMETHYLNAPHTHALENE

Takafumi Abe; Seiji Uchiyama; Takahiro Ojima, and Koichi Kida, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jul. 5, 1989, Ser. No. 375,860
Claims priority, application Japan, Sep. 27, 1988, 63-239762
Int. Cl.[5] C07C 1/00, 11/253, 1/20
U.S. Cl. 585—320 36 Claims

1. A process for producing 2,6-dimethylnaphthalene which comprises the following three steps: (1) reacting toluene, n-butene and carbon monoxide to produce p-tolyl sec-butyl ketone; (2) hydrogenating the carbonyl group of said p-tolyl sec-butyl ketone; and (3) dehydrogenating and cyclizing said hydrogenated p-tolyl sec-butyl ketone to produce said 2,6-dimethylnaphthalene.

5,008,480

PROCESS FOR CONVERTING TOLUENE AND BUTADIENE TO STYRENE AND 1-PENTENE

Lynn H. Slaugh, Cypress, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 26, 1990, Ser. No. 484,299
Int. Cl.[5] C07C 1/00, 4/24, 5/23
U.S. Cl. 585—323 7 Claims

1. A process for converting toluene and butadiene to styrene and 1-pentene, which process comprises:

(a) reacting toluene and 1,3-butadiene in the presence of an alkali metal catalyst,

(b) contacting the reaction product of step (a) with a double bond isomerization catalyst at a temperature sufficient to effect double bond isomerization,

(c) reacting the isomerized product of step (b) with ethylene in the presence of a disproportionation catalyst, and

(d) separating from the resulting product of step (c) product styrene and 1-pentene.

5,008,481

AROMATIZATION PROCESS UTILIZING A PILLARED LAYERED SILICATE PLUS A BASE METAL OR NOBLE METAL

Ivy D. Johnson, Medford; Pochen Chu, Voorhees, both of N.J., and Charles T. Kresge, West Chester, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 29, 1989, Ser. No. 459,212
Int. Cl.[5] C07C 2/52, 5/333
U.S. Cl. 585—418 11 Claims

1. A process for producing aromatic hydrocarbons which comprises contacting a feed containing non-aromatic C_6 to C_{12} hydrocarbons with a catalyst at a pressure of about atmospheric to 1,000 psig, a weight hourly space velocity of about 0.05 to 300 and a temperature of about 204° to 675° C., wherein said catalyst comprises a layered silicate and pillars of an oxide of at least one element selected from Groups IB, IIB, IIIA, IIIB, IVA, IVB, VA, VB, VIA, VIIA and VIIIA of the Periodic Table of Elements separating the layers ot the silicate, said catalyst comprising at least one element selected from the group consisting of Cr, Mo, W, Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, and Pt, said layered silicate lacking sheets composed of atoms which are octahedrally coordinated with oxygen atoms.

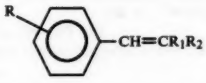
5,008,482

DIRECT PRODUCTION OF STYRENES BY REACTION OF AROMATICS WITH ALDEHYDES

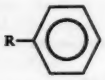
Werner O. Haag, Lawrenceville, N.J., and Rudolph M. Lago, Yardley, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Dec. 26, 1989, Ser. No. 456,704
Int. Cl.[5] C07C 1/20, 1/32
U.S. Cl. 585—437 6 Claims

1. A process for preparing a styrenic compound of the formula



where R, R_1 and R_2 are the same or different and are hydrogen, alkyl or cycloalkyl, said process comprising contacting (i) an aromatic compound of the formula



and (ii) an aldehyde of the formula

$$CHO—CHR_1R_2$$

with an intermediate pore size molecular sieve catalyst under conditions sufficient to convert said aromatic compound and said aldehyde into said styrenic compound.

5,008,483

HOLDERS WITH BUSBARS FOR A BUSBAR SYSTEM

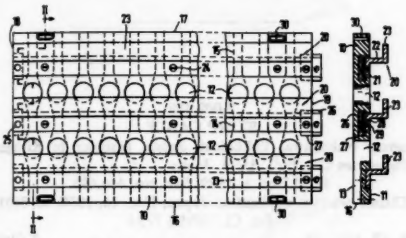
Hans Wagener, Rittershäuser Str. 14, 6344 Dietzhölztal-Rittershausen, Fed. Rep. of Germany

Filed Apr. 4, 1989, Ser. No. 333,127

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1988, 3811455

Int. Cl.[5] H02G 5/00

U.S. Cl. 174—68.2 13 Claims



1. A holder with busbars for a busbar system, comprising: an insulating support with receptacles in its top, a number of busbar sections fixed in position in said receptacles at regular intervals parallel to one another,

the insulating support being designed as a carrier plate that extends over the lengths of the busbar sections fixed in position in the receptacles;

a row of openings located in the carrier plate at least between adjacent busbar sections, said openings being aligned perpendicularly to the busbar sections one above the other; and

recesses located in the bottom of the carrier plate which serve as cable ducts, said recesses connecting the openings aligned one above the other perpendicularly to the busbar sections to each other and to the longitudinal sides of the carrier plate running parallel to the busbar sections.

5,008,484

ASSEMBLY KIT FOR A BUSBAR SYSTEM

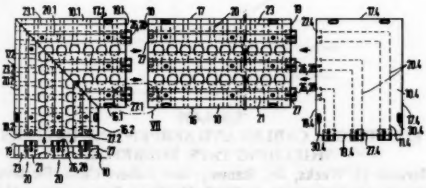
Hans Wagener, Rittershäuser Str. 14, 6344 Dietzhölztal-Rittershausen, Fed. Rep. of Germany

Filed Apr. 4, 1989, Ser. No. 333,119

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1988, 3811459

Int. Cl.[5] H02G 5/00

U.S. Cl. 174—68.2 13 Claims



1. An assembly kit for a busbar system made of holders and of busbar sections which can be fixed in position in receptacles of the holders, which receptacles are parallel to one another and are spaced from one another, comprising:

a. a first type of holder composed of a rectangular carrier plate having long sides and narrow sides with its longitudinal dimension aligned in the longitudinal direction of busbar sections which are fixed in position in reptacles its top and which receptacles terminate flush with its narrow sides,

b. a second type of holder consisting of a right-angle carrier plate in which right-angled busbar sections are fixed in position in receptacles in the top thereof that terminate flush with the end faces thereof, said end faces being located perpendicularly to the busbar sections,

c. connecting elements with which busbar ends of busbar sections can be connected to one another so as to connect electrically in the area of the joints of the carrier plates constituting holders of the first type and/or of the second type connected together in a row,

d. wherein the receptacles in the carrier plates constituting the holders of the first type and of the second type are arranged at uniform intervals with respect to one another and are identical in cross section and wherein the busbar sections have a Z-shaped cross section, a cross arm being inserted into each receptacle as a mounting arm and connecting to the respective carrier plate, one spacer arm holding the corresponding other cross arm as a clamping arm at a distance from and parallel to the top of the respective carrier plate, and wherein the cross arms of Z-shaped busbar sections acting as the clamping arms on the carrier plates are all aligned to the same longitudinal side of the carrier plate.

5,008,485

CONDUCTIVE SEAL

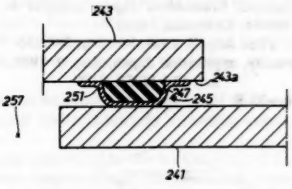
Hiroji Kitagawa, Nagoya, Japan, assignor to Kitagawa Industries Co., Ltd., Aichi, Japan

Filed Oct. 10, 1989, Ser. No. 419,590

Claims priority, application Japan, Oct. 28, 1988, 63-273873

Int. Cl.[5] H05K 9/00

U.S. Cl. 174—35 GC 18 Claims



1. A conductive seal for filling a gap between first and second surfaces comprising:

sealing means provided on at least one of the surfaces for filling the gap between the first and second surfaces, said sealing means comprising a material selected from a first group consisting of natural and synthetic resins;

a conductive layer formed on a surface of the sealing means, where the conductive layer is electrically connected to both surfaces, said conductive layer compatible with said sealing means and comprising a material selected from a second group comprising resinous material selected from said first group; and

a conductive agent mixed into said material of said conductive layer, said conductive agent comprising a material selected from a group consisting of metallic powder, carbon black and carbon fiber.

5,008,486

ELECTROMAGNETIC WAVE SHIELDING PANELS AND WALL STRUCTURE

Takashige Terakawa, and Wataru Kusakabe, both of Yokohama, Japan, assignors to Tokyo Keiki Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1989, Ser. No. 454,482

Claims priority, application Japan, Dec. 21, 1988, 63-322758

Int. Cl.[5] H05K 9/00

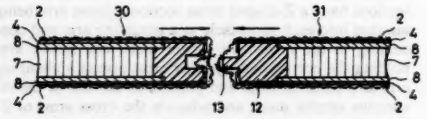
U.S. Cl. 174—35 MS 14 Claims

13. An electromagnetic wave shielding wall structure, comprising:

at least two electromagnetic wave shielding panels each having an underlying electrically conductive foil and an overlying electrically conductive net on each of two

opposite surfaces of a plate core member formed of an electrically nonconducting substance, frame members of an electrically nonconducting substance attached to side surfaces of said core member, each frame member having a longitudinal slot formed on at least one side surface, and an electrically conductive net disposed on said electrically conductive foil to extend beyond the edges of said panel member; and

at least one wedge member fitted in the slots of the opposite



side surfaces of said electromagnetic wave shielding panels;

the net fringe portions of said electromagnetic wave shielding panels being laid in said slots so that the net fringe portions extending beyond the edge of one surface of said electromagnetic wave shielding panels separated and electrically isolated from those extending beyond the edge of the other surfaces of said electromagnetic wave shielding panels, the net fringe portions being pinched by said wedge member.

5,008,487

CASING STRUCTURE

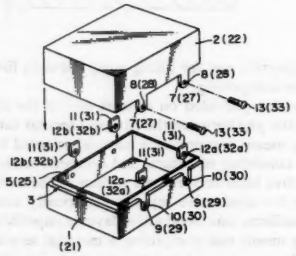
Takashi Shimmyo, Musashino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 3, 1989, Ser. No. 388,856

Claims priority, application Japan, Aug. 9, 1988, 63-105186

Int. Cl.[5] H05K *9/00*

U.S. Cl. 174—35 R **6 Claims**



1. A structure of a casing particularly for accommodating an electronic instrument or equipment comprising:

a body provided with a side wall having an inner surface on which a conductive coat is applied and an opening defined by the side wall, said side wall being provided with an inward-projected edge for defining the opening and an outward recess;

a lid provided with a side wall having an inner surface on which a conductive coat is applied and an opening defined by the side wall, said side wall being provided with an inward-recessed edge for defining the opening of the lid and an outward projected portion, said recessed edge of the lid being mated with said projected edge of the body when they are connected;

a conductive means having one end portion disposed between an outer surface of said side wall of the projected edge of the body and a conductive coat applied on an inner surface of the projected portion of the lid and the other end portion pressed to said coat on the inner surface of the side wall of the body; and

wherein said projected portion of said lid is provided with a projection extending downwardly and having a hole formed at substantially the central portion thereof, said recess of said body being provided with a cutout and a hole is formed in the side wall of the body in said recess, and both the end portions of said conductive means are provided with holes, said holes of the projection, the body wall and the conductive means being aligned when said body, said lid and said conductive means are assembled.

5,008,488

STRIP CABLE

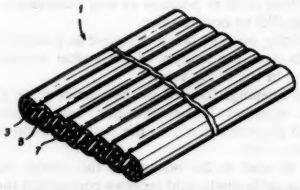
Asaharu Nakagawa, Yokkaichi, Japan, assignor to Kitagawa Industries Co., Ltd., Aichi, Japan

Filed Dec. 1, 1989, Ser. No. 444,695

Claims priority, application Japan, Dec. 16, 1988, 63-319163

Int. Cl.[5] H01B *7/34*

U.S. Cl. 174—36 **8 Claims**



1. A strip cable formed by a process comprising the steps of:

providing a plurality of signal conductors;

forming a coating of insulating material around the signal conductors;

developing carbon fibers through a vapor-phase process by using particles of a high-melting point metal or compounds thereof which have a diameter of 0.02–0.03 microns to reduce electrical resistivity of said carbon fibers; and

forming a conductive layer on the insulating material, wherein the conductive layer is comprised of said carbon fibers dispersed throughout a flexible non-conductive material.

5,008,489

ELECTRICAL CABLES AND SERPENTINE PATTERN SHIELDING TAPE THEREFOR

Herman D. Weeks, Jr., Ramsey, and Robert Cella, Fairlawn, both of N.J., assignors to Facile Holdings, Inc., Paterson, N.J.

Filed Oct. 25, 1989, Ser. No. 426,194

Int. Cl.[5] H01B *7/34*; B32B *15/04*

U.S. Cl. 174—36 **20 Claims**

1. A metal shielding tape for an electrical cable, said tape having a top and a bottom surface and having an adhesive coating on the top surface thereof in a pattern of parallel serpentine strips extending longitudinally thereon.

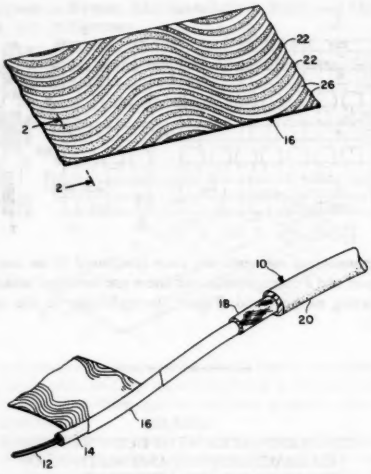
10. An electronic cable comprising:

an elongated conducting member;

an insulator surrounding the conducting member;

and a metal shielding tape having a top and a bottom side and surrounding the insulator, said metal shielding tape

having an adhesive coating on the top side thereof in a pattern of parallel serpentine strips extending longitudinally thereon, whereby said cable is effectively protected against electrical interference and moisture penetration.

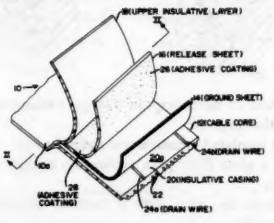


5,008,490

STRIPPABLE ELECTRICALLY SHIELDED CABLE

Richard F. Strauss, Morrisville, Pa.; Richard A. Fiacco, Bayville, N.J.; Hosrow T. Bordbar, Stanton, Calif.; Caesar C. Chen, Fountain Valley, Calif., and David Quiroz, Santa Ana, Calif., assignors to Thomas & Betts Corporation, Bridgewater, N.J.

Filed Jan. 19, 1990, Ser. No. 467,698
Int. Cl.[5] H01B 7/08
U.S. Cl. 174—36 **9 Claims**



1. A strippable, shielded electrical cable comprising:

a plurality of elongate, spaced electrical conductors; a casing of electrically insulative material enclosing said conductors, at least one of said conductors having an exposed portion free of said casing material;

an electrically conductive shield of permeable material overlying said casing and in electrical contact with said exposed conductor portion;

a layer of electrical insulation overlying said conductive shield; and

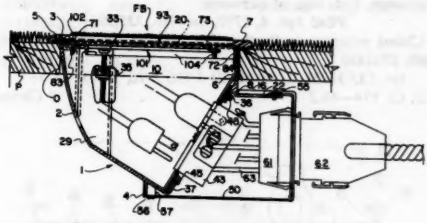
a sheet of electrical insulation disposed between said conductive shield and said layer, a first adhesive on one surface of said sheet facing said shield, said first adhesive being removably adhered to said shield, said first adhesive and said casing being removably adhered to each other through said permeable material, a second adhesive on an opposing surface of said sheet facing said layer, said second adhesive being removably adhered to said layer.

5,008,491

FLOOR BOX FOR ACCESS FLOORS

Timothy S. Bowman, Parkersburg, W. Va., assignor to Butler Manufacturing Company, Kansas City, Mo.

Continuation-in-part of Ser. No. 95,437, Aug. 27, 1987, abandoned. This application Mar. 13, 1989, Ser. No. 322,104
Int. Cl.[5] H02G 3/18
U.S. Cl. 174—48 **28 Claims**



1. In an access floor box:

a back wall having a top edge and a bottom edge;

a front wall having a top edge and a bottom edge

the front wall arcuately extending from its top edge in a direction toward its bottom edge;

a pair of side walls each having an upper section having a top edge and a lower section, the upper sections being connected to said front and back walls and each lower section extending outwardly from the bottom edge of the back wall;

flange means adjacent the top edges of the front, back, and side walls and respectively extending outwardly of the walls;

a back foot connected to the bottom edge of the back wall and extending outwardly therefrom and connected to the respective top edges of the lower sections of the side walls which extend outwardly from the back wall;

said front, back, and side walls forming a generally rectangular-shaped chamber with the respective top edges forming a rectangular-shaped opening to the chamber; and

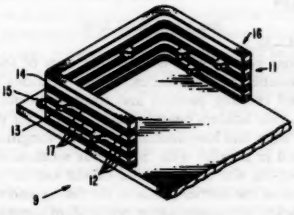
barrier means extending parallel said side walls and connected to said back foot and to the bottom edge of said front wall, the barrier means forming a plurality of channels for the passage of cable.

5,008,492

HIGH CURRENT FEEDTHROUGH PACKAGE

Raymond L. Brown, Fountain Valley, and Clifford L. Shock, Jr., Santa Ana, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 20, 1989, Ser. No. 424,414
Int. Cl.[5] H01L 23/02
U.S. Cl. 174—52.4 **20 Claims**



1. A package having high current feedthroughs comprising:

a base comprising a low thermal coefficient of expansion material; and

a plurality of alternating thermally conductive and electrically conductive rings stacked on the base to define an enclosure, the electrically conductive rings having a plurality of internal and external tabs defining high-current feedthroughs, the thermally conductive rings providing electrical isolation between the feedthroughs.

5,008,493

HOLDER WITH BUSBARS FOR A BUSBAR SYSTEM

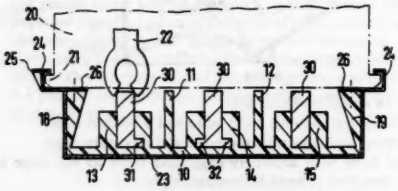
Hans Wagener, Rittershäuser Str. 14, 6344 Dietzhölztal-Rittershausen, Fed. Rep. of Germany

Filed Apr. 4, 1989, Ser. No. 333,296

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1988, 3811456

Int. Cl.[5] H02G *5/04*; H02B *1/04, 1/20*; H01R *25/14*

U.S. Cl. 174—68.2 3 Claims



1. A holder having currentcarrying busbars for a busbar system for connecting electrical equipment, said holder comprising a rectangularly-shaped insulating support having an upper side and parallel, equally spaced sockets in the upper side, current-carrying busbar sections fixed in said sockets, the longitudinal sides of the insulating support being aligned along the longitudinal direction of the busbar sections, the current-carrying busbar sections each having a connection portion extending perpendicularly from the top of the insulating support for plug contact with electrical equipment, the longitudinally-extending sides of the insulating support having end bridges which extend from the top of the insulating support perpendicularly and terminate in end faces which lie in the same plane as the ends of said connection portions of the current-carrying busbar sections, said insulating support further having separating partitions between the busbar sections, and the insulating support being set into a channel-shaped receptacle made of elastic material, the side walls of which enclose the end bridges at the outside, the receptacle having front faces which overlie the end faces of the end bridges and slot-shaped latching receptacles on the side walls which open toward each other for mechanical attachment of electrical equipment.

5,008,494

BUSBAR SYSTEM WITH HOLDERS AND BUSBAR SECTIONS

Hans Wagener, Rittershäuser Str. 14, 6344 Dietzhölztal-Rittershausen, Fed. Rep. of Germany

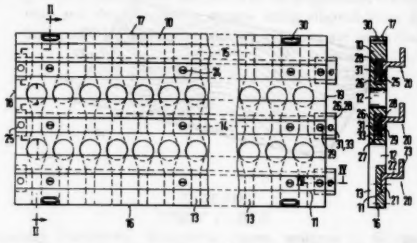
Filed Apr. 3, 1989, Ser. No. 332,708

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1988, 3811457

Int. Cl.[5] H02G *5/00*

U.S. Cl. 174—68.2 13 Claims

1. A busbar system with holders, the tops of said holders having a number of receptacles, busbar sections spaced at intervals and running parallel and fixed in position in said receptacles, said holders being rectangular carrier plates having narrow sides and longitudinal sides, said longitudinal sides being aligned in parallel with the busbar sections, the busbar sections abutting the narrow sides of the carrier plates, the narrow sides of the carrier plates at the facing end sections of the receptacles accommodating one-half of connecting elements aligned in the longitudinal direction of the busbar sections, said connecting elements being connected so as to conduct electrically and so that the holders are joined together in a row with the ends of the busbar sections abutting, wherein



the connecting elements are each composed of an insulating support and a contact plate, and there are threaded holes in the insulating support and aligned through-holes in the contact plate.

5,008,495

ELECTRIC CABLE WITH BURN RESISTANT CHARACTERISTICS AND METHOD OF MANUFACTURE

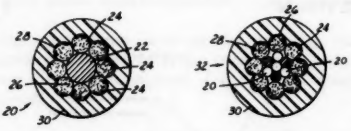
Donald Mudgett, Coopersville, Mich., assignor to Lestox, Inc., Birmingham, Mich.

Continuation-in-part of Ser. No. 330,008, Mar. 29, 1989, Pat. No. 4,906,308, and a continuation-in-part of Ser. No. 329,927, Mar. 29, 1989, Pat. No. 4,910,361, and a continuation-in-part of Ser. No. 365,748, Jun. 13, 1989, Pat. No. 4,966,638. This application Feb. 12, 1990, Ser. No. 478,600

The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.

Int. Cl.[5] H01B *7/34*

U.S. Cl. 174—121 R 9 Claims



1. A method of insulating an energy transmission member comprising the steps of:

creating a insulated transmission member by;

wrapping a glass fiber yarn around an energy transmission member;

impregnating the yarn with a metered amount of a first mixture; and

preventing the first mixture from reaching the inner periphery of the yarn and contacting the energy transmission member.

6. An insulated transmission member comprising:

at least one energy transmission member;

glass fiber yarn wrapped around said energy transmission member, said glass fiber yarn having inner periphery that contacts said transmission member;

said glass fiber yarn being impregnated by a first silicone mixture, said first silicone mixture being impregnated into the outer periphery of said glass fiber yarn, said inner periphery of said glass fiber yarn being unimpregnated such that said first silicone mixture does not contact said transmission member; and

a second silicone mixture coating disposed around the outer periphery of said glass fiber yarn.

5,008,496

THREE-DIMENSIONAL PRINTED CIRCUIT BOARD

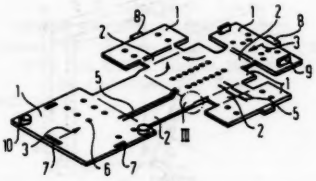
Hans-Fr. Schmidt, Eurasburg; Siegfried Rauchmaul, Munich, and Juergen Bednarz, Penzberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 24, 1989, Ser. No. 383,648

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1988, 3831432

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—254 20 Claims



1. A three-dimensional printed circuit board, comprising:

two rigid plate sections capable of lying in different planes;

a flexible connecting section between adjacent plate sections; and

said plate sections and said connecting section being manufactured as a one-piece injection molded part of a thermoplastic molding material, said connecting section being formed as a weak area of a lesser thickness than said plate sections.

15. A method for forming printed circuit boards, comprising the steps of:

injection molding a part of a thermoplastic material to form rigid board sections connected by joining sections in said part, the joining sections being of a thickness substantially less than a thickness of the rigid board sections; and

bending the injection molded part at the joining sections to form a three-dimensional circuit board.

5,008,497

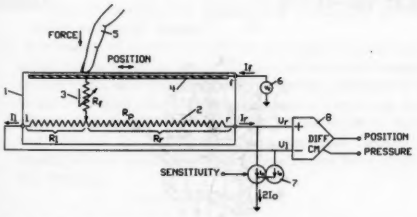
TOUCH CONTROLLER

David J. Asher, P.O. Box 8748, Albany, N.Y. 12208

Filed Mar. 22, 1990, Ser. No. 497,691

Int. Cl.[5] G08C *21/00*

U.S. Cl. 178—18 11 Claims



1. A touch controller comprising:

(a) a touch sensor comprising a position resistor having a definite length wherein the impedance of the position resistor changes in response to touch from a disjunct member;

(b) a current regulator electrically connected to the touch sensor for generating a pressure signal by maintaining a prescribed current through the touch sensor whereby the voltage produced by the current regulator changes as a function of the pressure applied to the touch sensor by the disjunct member; and

(c) a differential amplifier electrically connected to the position resistor for generating a position signal by amplifying the differential voltage across the length of the position resistor whereby the differential voltage across the length of the position resistor changes as a function of the position of the disjunct member on the touch sensor.

5,008,498

ROTARY SWITCH

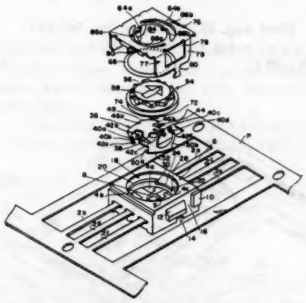
Atsuo Yamazaki, c/o Iruma Center, Copal Electronics Co. Ltd. No. 110-1, Shimoshinden, Araku, Iruma City, Saitama Prefecture, Japan

Division of Ser. No. 376,599, Jul. 7, 1989. This application Jan. 5, 1990, Ser. No. 461,549

Claims priority, application Japan, Aug. 11, 1989, 1-106294[U]; Aug. 11, 1989, 1-200966; Aug. 23, 1989, 1-110242[U]

Int. Cl.[5] H01H *19/60, 21/80*

U.S. Cl. 200—11 R 1 Claim



1. A rotary switch, comprising:

a housing having an upwardly open chamber opening out of the top of said housing;

terminal lead fixed contacts in said housing exposed in the bottom of said chamber and spaced from each other in an asymmetrical pattern;

a planar plate-shaped contact member fixedly positioned in said chamber and having a plurality of output contact fingers corresponding to the respective terminal lead fixed contacts and movable transversely of the plane of said contact member and each output contact finger having a contact projection thereon and a contact point thereon and said contact fingers being exposed to corresponding terminal lead fixed contacts in the bottom of said chamber with the contact points normally spaced from said terminal lead fixed contacts;

a rotor rotatably mounted in said chamber and having cam patterns on the under side thereof toward said contact member for engagement with the contact projections on corresponding ones of said contact fingers for causing said contact points to contact said terminal lead contacts in the bottom of said chamber seriatim as said rotor is rotated, and further having click cams around the top thereof;

said housing having a pair of opposite side walls and a center projection projecting laterally of said housing from each side wall, and having a corner projection projecting laterally from each said side wall and spaced from the respective center projections toward one side of said housing for defining a clearance therebetween, said housing further having grooves in the bottom thereof opening out of the bottom edge of said opposite side walls; and

a case having a top wall with a central aperture therein through which the upper portion of said rotor extends, and having depending walls depending from opposite side edges of said top wall along said opposite side walls of said housing, said depending walls each having a side aperture in the center thereof for fitting in snapping engagement

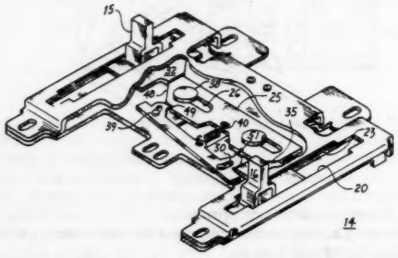
over a corresponding center projection and having a frame portion depending along one side of said side aperture having a width for fitting into said clearance and having a further frame portion extending along the other side of said side aperture having a width greater than said clearance, and depending lugs extending from the bottoms of said depending walls and bent into said grooves for fixedly. holding said case on said housing, and said casing further having click projections depending from said top wall for engagement with said click cams on said rotor for producing an audible click when said rotor is rotated, whereby said case can be fitted onto said housing oriented in only one direction toward said one side of said housing.

5,008,499

BI-STABLE INTERLOCK ARRANGEMENT FOR MOLDED CASE CIRCUIT BREAKERS

Edgar Yee, Vernon, and Richard E. Bernier, Southington, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Aug. 20, 1990, Ser. No. 569,897
Int. Cl.[5] H01H *9/26*
U.S. Cl. 200—50 C **10 Claims**



1. An interlock device for electric circuit breakers and switches comprising in combination:

a planar metal base having first elongated slots arranged on opposite sides thereof;

a planar metal cover on said base having second elongated slots arranged on opposite sides thereof over said first slots;

first and second interlock handles arranged for travel within said first and second slots;

first and second cams attached to said interlock handles, said first and second cams including first and second angulated sides;

an interlock cam on said base extending between said first and second cams, said interlock cam including angulated ends interacting with said angulated sides to allow only one of said first and second cams and attached interlock handle to move in one direction at any one time; and

means on said base interacting with said interlock cam to prevent said one of said cams and attached interlock handle from moving in said one direction until the other of said cams has already moved a predetermined distance in an opposite direction.

5,008,500

DOCUMENT FEEDER WINDOW CLOSED DETECTION ASSEMBLY

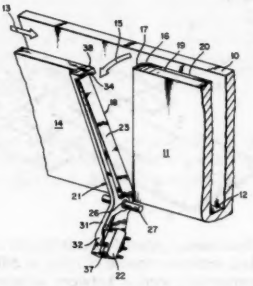
T. A. Hamilton, Fife, Scotland, assignor to Unisys Corporation, Blue Bell, Pa.

Filed May 18, 1990, Ser. No. 525,454
Claims priority, application United Kingdom, May 31, 1989, 8912426
Int. Cl.[5] H01H *3/16*
U.S. Cl. 200—61.7 **7 Claims**

1. A system for detecting the open or closed state of a window assembly in an equipment wall, said window assembly, mounted for rotation about a hinged axis defined by a hinge pin, comprising;

a micro-switch mounted on an extension of the window assembly;

a lever freely mounted for rotation on the window assembly hinge axis, one arm of said lever including a portion adapted to engage a plunger of said micro-switch and another arm of said lever including a portion adapted to engage said equipment wall at a point remote from said



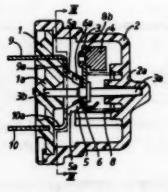
hinge axis, the arrangement being such that, when said window assembly is open, the spring loading on said micro-switch plunger, acting on said one arm of said lever, rotates said lever in a first direction relative to said window assembly, and, when the window assembly is closed, engagement between said wall and said other arm of said lever rotates said lever relative to said window assembly in the direction opposite to said first direction so that said one arm of said lever operates said micro-switch by depressing said plunger against said spring loading.

5,008,501

COLLISION DETECTING DEVICE FOR MOTOR VEHICLES

Norio Kumita; Takaaki Yamamoto, both of Okazaki; Seiichi Narita, Kariya, and Takaaki Ori, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 15, 1989, Ser. No. 408,031
Claims priority, application Japan, Sep. 15, 1988, 63-231651; Aug. 8, 1989, 1-205097
Int. Cl.[5] H01H *35/14*
U.S. Cl. 200—61.45 R **9 Claims**



1. A collision detecting device for a motor vehicle comprising:

a cylindrical case having an open end and a bottom;

a base plate rotatably coupled within the open end of said case and secured in place to provide a sealed chamber;

a support shaft housed within said sealed chamber and being rotatably carried at one end thereof on the bottom of said case and at the other end thereof on said base plate;

a rotary member provided on said support shaft for rotation therewith and having the center of gravity positioned eccentrically from its rotational axis;

a pair of contact elements provided on said rotary member

for rotation therewith and being symmetrically arranged with respect to the rotational axis of said rotary member;

a pair of electric terminals fixed to said base plate, said electric terminals each having an internal contact portion slidably engageable with each of said contact elements and an external terminal pin for connection to an electric control circuit; and

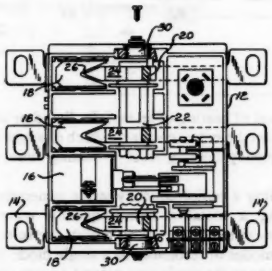
resilient means housed within said sealed chamber to apply a counteracting rotational force to said rotary member depending on an angle of rotation through which said rotary member has rotated.

5,008,502

POWER SWITCHING CONTACTOR

Nawaz I. Kasam, 7586 Northway Dr., Hanover Park, Ill. 60103

Filed Feb. 3, 1989, Ser. No. 307,829
Int. Cl.[5] H01H *1/32, 9/04*
U.S. Cl. 200—248 **3 Claims**



3. A power switching contactor for electrical loads comprising:

(a) a housing for switching contacts;

(b) a rotatable contactor shaft having a plurality of contact arms selectively engageable with a plurality of contact pads;

(c) a means for mounting said shaft for rotation in said housing including:

(i) a pair of bearings each receiving one end of said shaft, and a pair of slots formed in said housing and dimensioned to receive said pair of bearings, and

(ii) a pair of removable filler blocks dimensioned to be received in said slots and being releasably engageable with said bearings for sealing said housing to prevent entry of foreign matter,

(d) a plurality of alignment pillows positioned on said shaft adjacent the location where the contact arms are secured to said shaft, said alignment pillows being contoured so as to act as a fulcrum, whereby each contact arm can rock side-to-side about a corresponding pillow when its distal end engages the corresponding contact pad thereby to ensure proper electrical contact for efficient flow of electric current.

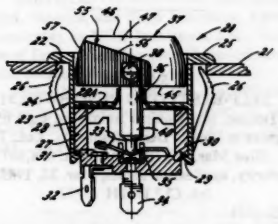
5,008,503

SWITCH WITH COLORED INDICATOR CAP

John A. Stuhlmacher, Crown Point, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.

Filed Oct. 27, 1989, Ser. No. 427,737
Int. Cl.[5] H01H *9/18, 23/14*
U.S. Cl. 200—308 **11 Claims**

1. A switch actuator comprising an enlarged manually engageable head having a first surface, having an oppositely facing second surface and having a peripheral side surface extending between said first and second surfaces around the margins thereof, oppositely extending trunnions projecting transversely from said side surface, and an indicator cap made of resilient material and having trunnion receiving holes for positive snap action attachment to said trunnions for retaining said cap on said head, and said indicator cap and said side wall



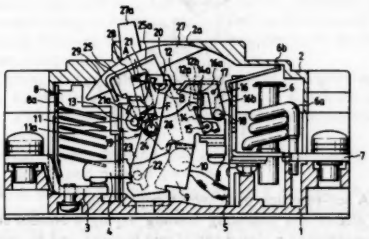
being of different colors whereby the cap visually highlights a portion of the actuator.

5,008,504

SWITCHING MECHANISM IN CIRCUIT BREAKER

Seishiro Ozaki; Nobuo Asahi, and Tsuneo Ebisawa, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Dec. 29, 1989, Ser. No. 459,363
Claims priority, application Japan, Jan. 6, 1989, 64-966
Int. Cl.[5] H01H *5/06*
U.S. Cl. 200—401 **7 Claims**



1. A switching mechanism in a circuit breaker, comprising:

a casing;

means movably coupled to the casing for movably holding a movable contact, said movable contact engaging a stationary contact at times when the circuit breaker is in a normal state and disengaging the stationary contact at times when the circuit breaker is a tripped state;

a latch coupled to the casing, said latch being located from moving at times when the circuit breaker is in the normal state;

a toggle link having upper and lower link portions being movably coupled to one another, said upper link portion having a striking part, said upper link portion being coupled to said latch, said lower link portion being coupled to said holding means,

said toggle link and said latch being relatively pivoted for a snap action, said toggle link being subjected to an elastic force applied in a stable direction within a dead zone by a switching spring at times when the circuit breaker is in the normal state, and being subjected to a rapid variation from the stable direction resulting in the direction of the elastic force leaving the dead zone at times when the circuit breaker is in the tripped state; and

a stopper fixedly formed on the casing adjacent said upper link portion of said toggle link, said striking part of said upper link portion and said stopper being spaced a distance from one another at times when the circuit breaker is in the normal state, and being relatively positioned so that said striking part strikes said stopper intermediate in the tripping action to shorten a radius about which a

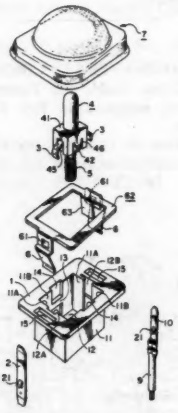
portion of the toggle link pivots, thereby to accelerate the tripping action.

5,008,505

SELF-RESETTING PUSH SWITCH

Tsunesuke Takano, and Kouichi Shinzawa, both of Tokyo, Japan, assignors to Daiichi Denso Buhin Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1990, Ser. No. 494,467
Claims priority, application Japan, Mar. 22, 1989, 1-32225[U]
Int. Cl.[5] H01H *13/52*
U.S. Cl. 200—531 8 Claims



1. A self-resetting push switch comprising:

an electrically insulating housing having a bottom surface establishing a closed end of said housing, and an open end opposite said closed end, and first and second pairs of opposing inner wall surfaces extending from said bottom surface;

a pair of first grooves formed on respective ones of said first pair of opposing inner wall surfaces;

a second groove formed on at least one of said second pair of said opposing inner wall surfaces, said second groove having a projection formed therein;

a first stationary contact piece inserted in one of said first grooves;

an operation rod having an integral sliding sleeve defining a lower surface, and first and second movable contact pieces projecting outwardly from said sliding sleeve, said first movable contact piece being capable of coming into sliding contact with said first stationary contact piece, said sliding sleeve having at least one engagement piece engageable with said projection within said second groove;

a spring interposed between the bottom surface of said housing and the lower surface of said sliding sleeve, and spring urging said operation rod in a direction which causes a part of said operation rod to project outwardly from said housing; and

a frame having a pair of conductive and resilient fixing piece, and a second stationary contact piece capable of coming into sliding contact with said second movable contact piece, wherein

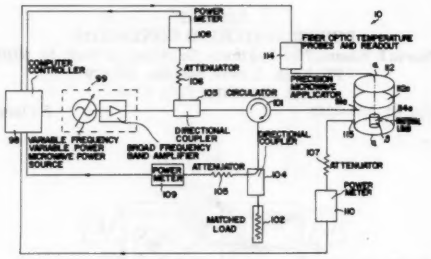
said frame is coupled to an upper portion of said housing such that said pair of conductive and resilient fixing pieces are disposed on opposing side portions of said housing.

5,008,506

RADIOFREQUENCY WAVE TREATMENT OF A MATERIAL USING A SELECTED SEQUENCE OF MODES

Jes Asmussen, Okemos, and Ronald E. Fritz, Haslett, both of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Oct. 30, 1989, Ser. No. 429,063
Int. Cl.[5] H05B *6/74*
U.S. Cl. 219—10.55 M 28 Claims



1. A method of heating of an initially liquid or solid material with a complex dielectric constant which changes as a function of radiofrequency heating over a heating time which comprises:

(a) providing a radiofrequency wave generating apparatus including a metallic radiofrequency wave applicator which is excited in one or more of its pre-selected material loaded modes of resonance as a single mode or controlled multimode in the applicator around an axis of the applicator so that there is pre-selected heating of the material in the applicator, antenna means connected to and extending inside the applicator for coupling the radiofrequency wave to the applicator; and

(b) continuously heating the liquid or solid material with an initial complex dielectric constant positioned in the applicator in a precisely oriented position with the radiofrequency wave and maintaining an initial mode of the radiofrequency wave with the material in the applicator as the dielectric constant of the material changes for a period of time during the heating and then shifting to at least one second mode in the applicator during the heating after the first mode is extinguished and maintaining the second mode as the complex dielectric constant of the material changes during the heating, wherein the modes in the applicator are maintained using measured incident and reflected power such that the reflected power from the applicator is continuously tuned to approximately zero in the applicator and the incident power is tuned to a desired level in the applicator.

5,008,507

MICROWAVE FOOD PRODUCTS AND METHOD OF THEIR MANUFACTURE

Peter S. Pesheck, Brooklyn Center; William A. Atwell; Madonna M. Krawiecki, both of Andover, and George R. Anderson, Minneapolis, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 903,007, Sep. 2, 1986, Pat. No. 4,926,020. This application Aug. 13, 1987, Ser. No. 85,125
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 E 58 Claims

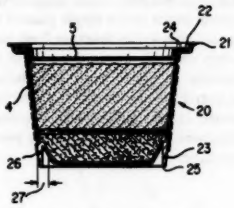
1. A food product for controlled heating in a microwave oven, said food product comprising:

(a) at least one layer of edible component having thickness and dielectric properties;

(b) at least one layer of material proximate said at least one

layer of edible component having thickness and dielectric properties; and

(c) the thickness of at least one of said layers and the position of said at least one layer of edible component relative to



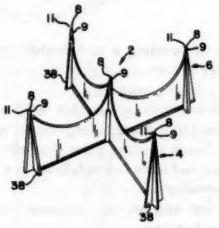
said at least one layer of material being selected for the purpose that said at least one layer of edible component will heat to within a preselected temperature range during exposure to microwave radiation.

5,008,508

COOKING APPARATUS FOR SUSPENDING A FOOD PRODUCT

Robert B. Skerker, Buffalo, N.Y., and William Prindle, Santa Barbara, Calif., assignors to Robinson Knife Manufacturing Co., Inc., Sprinville, N.Y.

Filed Mar. 13, 1990, Ser. No. 493,138
Int. Cl.[5] H05B 6/80
U.S. Cl. 219—10.55 E **11 Claims**



1. An apparatus for suspending a food product while cooking comprising

(a) a least two reversible engageable support members;

(b) a plurality of spaced apart penetration means on each of said support members wherein each of the plurality of penetration means comprises an upwardly extending projection adapted to penetrate and suspend the food product; and

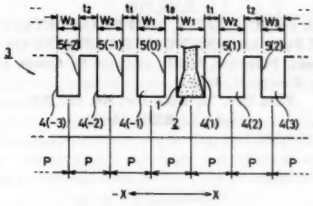
(c) means for ventilating the food product comprising a plurality of legs extending from each of the penetration means downwardly and outwardly in spaced apart relationship thereby forming a channel for the escape of moisture and gases from the food product.

5,008,509

PRODUCTION METHOD OF HONEYCOMB DIE-FORMING ELECTRICAL DISCHARGE MACHINING ELECTRODES AND PRODUCTION METHOD OF HONEYCOMB DIES

Isao Hattori, Nagoya, and Shoji Futamura, Kawasaki, both of Japan, assignors to NGK Insulators, Ltd., Nagova City and Institute of Technology Precision Electrical discharge Works, Kawasaki, both of, Japan

Filed Mar. 15, 1990, Ser. No. 493,666
Claims priority, application Japan, Mar. 20, 1989, 1-68806
Int. Cl.[5] B23H *9/00, 1/04;* **B29C** *47/12;* **B24B** *53/06*
U.S. Cl. 219—69.15 **6 Claims**



1. A method for the production of an electrical discharge machining electrode for forming a honeycomb die, said electrode being provided with a plurality of electrode groove portions formed by cutting parallel grooves in an electrode material and with a plurality of projecting electrode portions corresponding to forming grooves of the honeycomb die and formed between their corresponding electrode groove portions, comprising the steps of:

cutting said parallel grooves by means of a grinding wheel formed in a reverse tapered shape in which the grinding width is gradually widened toward its peripheral direction; and

progressively dressing said grinding wheel during the cutting of said parallel grooves.

6. A method for the production of a honeycomb die provided with forming grooves, which have configurations corresponding to the profile of a honeycomb structure to be formed and are to be formed by electrical discharge machining using a honeycomb die-forming electrical discharge machining electrode provided with a plurality of projecting electrode portions corresponding to the forming grooves, which comprises;

using, as the honeycomb die-forming electrical discharge machining electrode, a honeycomb die-forming electrical discharge machining electrode provided with a plurality of electrode groove portions, which have been formed by cutting a plurality of grooves in an electrode material while moving a grinding wheel formed into a reverse tapered shape, in which the grinding width is gradually widened toward its peripheral direction, relative to the electrode material so as to cut a groove in the electrode material, and subsequent to the cutting of the groove, relatively moving the grinding wheel and the electrode material by desired pitches in a direction perpendicular to the grinding direction, and dressing the grinding surface of the grinding wheel at plural pitch distances relative to the movement of the grinding wheel and the electrode material toward the directions of both ends from the center portion for the purpose of narrowing the grinding width, and at the same time provided with a plurality of projecting electrode portions formed between their corresponding electrode groove portions, owing to the formation of the plural electrode groove portions, in such a manner that the thicknesses of the plural projecting electrode portions become greater stepwise toward both ends from the center of the electrode;

cutting, as a first machining step, forming grooves being in rows in one direction relative to a material to be formed by electrical discharge machining making use of the hon-

eycomb die-forming electrical discharge machining electrode; and

after completion of the first machining step, cutting, as a second machining step, forming grooves in a direction crossing perpendicularly to said one direction by electrical discharge machining making use of the honeycomb die-forming electrical discharge machining electrode in a condition that the honeycomb die-forming electrical discharge machining electrode and the material to be formed have been relatively rotated 90°;

thereby cutting forming grooves, whose dimensions in width become greater stepwise toward both ends from the center, in the honeycomb die.

5,008,510

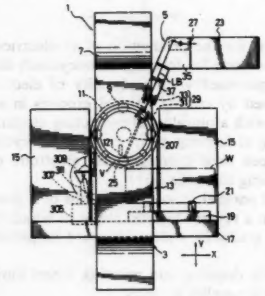
LASER PUNCH PRESS, AND BEAM DETECTION DEVICE FOR ADJUSTING THE LASER BEAM PATH

Ryoji Koseki, Fullerton, Calif., assignor to Amada Company, Limited, Kanagawa, Japan

Filed Dec. 29, 1989, Ser. No. 459,298

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.7 **14 Claims**



1. A punch press having a V-axis and a laser cutting device, which comprises:

a laser cutting head mounted on the punch press;

a laser generator provided in a position spaced from the punch press; and

means for laser beam path adjustment of a laser beam from the laser generator to the laser cutting head, wherein the means for beam path adjustment comprises a plurality of reflective surfaces which suitably bend the laser beam and are positioned on the laser generator side spaced from the laser cutting head.

5,008,511

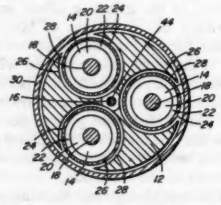
PLASMA TORCH WITH AXIAL REACTANT FEED

Douglas A. Ross, Richmond, Canada, assignor to The University of British Columbia, Canada

Filed Jun. 26, 1990, Ser. No. 543,403

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—121.48 **20 Claims**



1. A plasma torch comprising a plurality of arc forming chambers arranged symmetrically about an axis, a first arc forming electrode in each said arc forming chamber, a common electrode cooperating with each of said first electrodes in said chambers to form an arc in each of said chambers a plasma passage through said common electrode opening into each of said chambers, each of said plasma passages leading from its respective of said chamber and converging toward each other in a region of convergence into a single plasma nozzle passage extending along said axis and a reactant feed passage opening axially into an end of said nozzle passage in said region of convergence thereby to inject reactant substantially axially into said plasma nozzle passage and in the direction of travel of a plasma jet formed in said plasma nozzle passage by plasma passing from chambers through said plasma passages into said plasma nozzle passage.

5,008,512

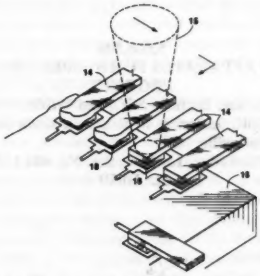
METHOD OF LASER BONDING ELECTRICAL MEMBERS

Phillip J. Spletter, Cedar Park, and Colin A. MacKay, Austin, both of Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Filed Sep. 8, 1989, Ser. No. 405,377

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.64 **16 Claims**



1. A method of bonding a first highly reflective metallic electrical member to a second highly reflective metallic electrical member by a laser comprising,

coating the first electrical member with a material that is well absorbent to the laser energy at the wavelength of the laser, has a lower melting point than either of the electrical members, and has a low solubility in a solid alloy of the electrical members,

aligning the first and second electrical members with the coating therebetween,

holding the first and second electrical members in contact with the coating to form an interface, and

bonding the first and second members at the interface by applying a laser beam, wherein the laser characteristics are selected so that as an alloy of the electrical members solidifies a solidification front will drive the molten coating and molten compounds containing the coating away from the bond interface towards the exterior periphery of the bond, wherein substantially all of the solidified bond interface consists of an alloy of the first and second members, and wherein substantially all of the bond interface strength results from an alloy of the first and second members.

5,008,513

SHAPING OF BONDED ABRASIVE PRODUCTS

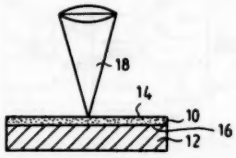
Mohammad Najafi-Sani, 4 Heerlen Road, Ormonde, Johannesburg, Transvaal, South Africa, and Philip A. Bex, 4 Hillcrest Road, Camberley, Surrey, United Kingdom

Filed Nov. 9, 1989, Ser. No. 435,199

Claims priority, application United Kingdom, Nov. 10, 1988, 8826305

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.69 7 Claims



1. A method of removing a layer of material from the surface of a bonded abrasive compact including the steps of directing a laser beam at the surface of a bonded abrasive compact, while causing the laser beam to traverse the surface to damage it to a desired depth, wherein the laser beam is first caused to traverse the surface of the bonded abrasive compact in one or more passes creating substantial damage to the surface, followed by a final pass which creates lesser damage, and removing damaged material remaining on the surface.

5,008,514

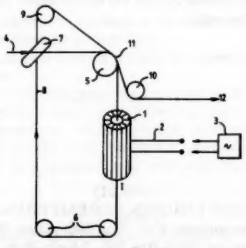
METHOD AND APPARATUS FOR HEATING A METALLIC ELONGATED PRODUCT

John Kyriakis, High Wycombe, Great Britain, assignor to Beta Instrument Company Limited, Buckinghamshire, England

Filed Dec. 29, 1989, Ser. No. 459,239

Int. Cl.[5] C21D *9/62;* H05B *1/00*

U.S. Cl. 219—155 13 Claims



1. Apparatus heating a length of a metallic elongated product, comprising:

a plurality of insulating pulleys for movably guiding a portion of the product over a path including a closed loop, one of said pulleys having a double groove, and another of said pulleys being located adjacent the double-grooved pulley to receive said product from one groove thereof and to return it to the other groove thereof; and

a transformer, a secondary winding whereof comprises said product disposed over said closed loop.

5,008,515

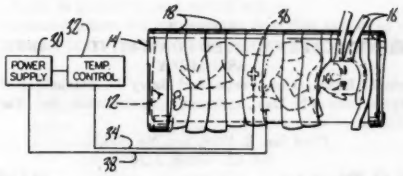
BODY TEMPERATURE RESPONSIVE TRANSPORT WARMING BLANKET

William C. McCormack, 3703 Woodland St., Ames, Iowa 50010

Filed May 10, 1990, Ser. No. 521,410

Int. Cl.[5] H05B *3/34*

U.S. Cl. 219—212 6 Claims



1. A body temperature responsive transport warming blanket comprising,

a blanket having a first section integrally connected to a second section, said second section including a plurality of strips independently operable and adapted to provide access to selected areas of the body wrapped in said blanket,

electrical heating elements extending substantially throughout said first and second sections including said plurality of strips, and

an electrical control circuit including said heating elements, a power supply and a skin contact temperature sensor adapted to be attached to said body, and a temperature control means adapted to be adjusted to a predetermined desired body temperature which is substantially continuously maintained throughout operation and use of the blanket by said heating element being operative only as required and indicated by said temperature sensor to maintain said predetermined desired body temperature within a narrow range.

5,008,516

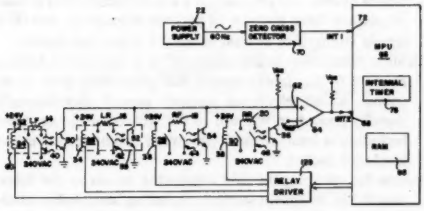
RELAY CONTROL METHOD AND APPARATUS FOR A DOMESTIC APPLIANCE

Ronald W. Holling, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 4, 1988, Ser. No. 228,339

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—519 47 Claims



1. A relay control for an apparatus having a load adapted to be powered by a time varying power supply signal having a zero crossover or minimum magnitude point comprising:

relay means for coupling said power supply signal to said load, said relay means having a contact assembly with open and closed positions;

control means for generating a relay control signal to change the state of said contact assembly between said open and closed positions;

means for sensing the actual change of the state of the contact assembly;

means responsive to said control means and said sensing

means for determining the time delay between the generation of said relay control signal and the actual changing of the contact assembly's state;

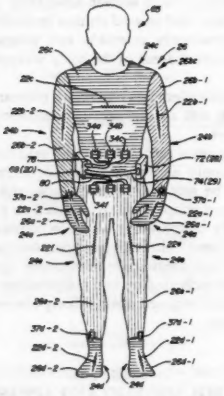
said control means being responsive to said power supply signal and said time delay determining means to cause the state of the contact assembly to change when said power supply signal is approximately at said zero crossover or minimum magnitude point.

5,008,517

ELECTRICALLY HEATED FORM-FITTING FABRIC ASSEMBLY

Kevin L. Brekkestran, Fargo, and Barry D. Batcheller, West Fargo, both of N. Dak., assignors to Environwear, Inc., Fargo, N. Dak.

Filed Sep. 8, 1989, Ser. No. 404,827
Int. Cl.[5] H05B *3/34*
U.S. Cl. 219—211 **24 Claims**



1. An electrically heated form-fitting fabric assembly for use in an electrically heated, cold-weather garment, comprising:

lightweight, stretchable, form-fitting fabric means for covering at least a portion of the body of a wearer of the garment, the fabric means being made at least primarily of a lightweight fabric having (1) a weight in the range of about 2 to 20 ounces per square yard, (2) a break elongation of at least 100 percent, (3) a tensile recovery of at least 50 percent from about a 50 percent elongation, and (4) a tensile strength of at least about 0.2 grams per denier;

flexible conductor means arranged in a serpentine fashion relative to the fabric means, for generating heat in response to an electrical current passed therethrough, thereby providing warmth to the wearer of the garment, including at least one multiple-strand conductor having an insulation jacket;

means for securing the said conductor means to the fabric means, the means for securing including stretchable stitching for securing the conductor and its insulating jacket to the fabric, the stitching further being of a pattern operable to draw portions of the fabric on opposing sides of the conductor upwardly into contact with the insulating jacket so as to partially but not completely circumscribe the conductor and its insulating jacket, said stitching circumscribing that part of the conductor which is not circumscribed by the fabric; and

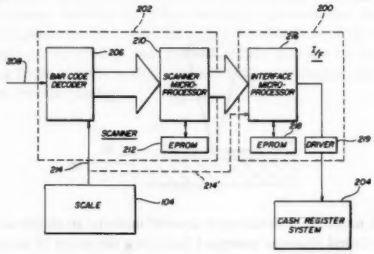
connector means for removably connecting the conductor means with a power source to thereby provide power to the conductor means, thereby enabling the conductor means to generate heat to heat the garment.

5,008,518

DATA GATHERING SYSTEM INTERFACE

Andrew P. Taussig, Eugene, and Blake L. Isaacs, Springfield, both of Oreg., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Mar. 24, 1989, Ser. No. 328,177
Int. Cl.[5] G06K *7/14*; G07G *1/12*
U.S. Cl. 235—383 **10 Claims**



1. A data gathering system for use in a checkout counter to determine information relating to products to be purchased and to provide such information to a cash register system, comprising:

optical scanning means supported on a subplatter for reading coded labels on products presented to said data gathering system, said optical scanning means including a bar code decoder circuit for decoding scan signals to provide coded label data, a scanner microprocessor for correlating and supplying coded label data, and scanner memory means for storing control software for use by said scanner microprocessor,

scale means supported within said checkout counter for determining weights of said products, said scale means including said subplatter located below the upper surface of said checkout counter, said scale means capable of supplying weight data to said bar code decoder circuit of said optical scanning means, and

a common interface circuit, responsive to both said scale means and said optical scanning means, for providing weight data and coded label data to said cash register system, wherein said scanner microprocessor of said optical scanning means is capable of supplying said coded label data to said common interface circuit, and said scale means is capable of supplying said weight data to said common interface circuit via said scanner microprocessor without alteration.

5,008,519

FOOLPROOF COUPON REDEMPTION SYSTEM

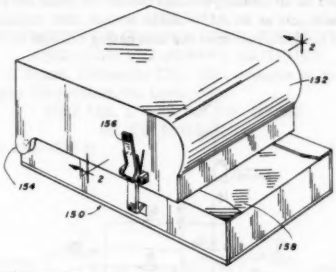
William R. Cunningham, P.O. Box 500, Anna, Ill. 62906; Carmelo S. Amareno, 3775 Bay Rd., Menlo Park, Calif. 94026, and Helmut Kayan, 222 Scenice Dr., Redwood City, Calif. 94062

Filed Nov. 16, 1988, Ser. No. 272,176
Int. Cl.[5] G06K *15/00*
U.S. Cl. 235—383 **37 Claims**

1. A coupon-redemption system for redeeming and validating coupons at a check-out counter of a supermarket, and the like, comprising, in combination:

an electronic cash register for totaling purchased goods of a consumer;

an automatic coupon-reading device for automatically transporting a coupon and reading bar code on a coupon; and



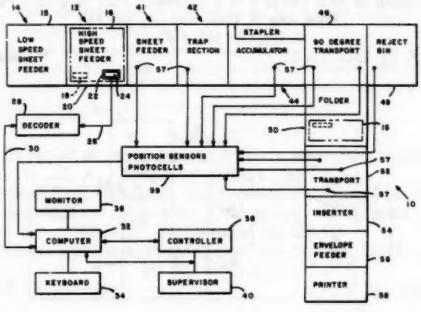
means coupling said coupon-reading device to said cash register for transferring data therebetween.

5,008,520

METHOD AND APPARATUS FOR READING A BAR CODE ON A MOVING SHEET

John Georgiou, 250 Glover Ave. #43, Norwalk, Conn. 06850; Thomas F. Gueth, 43 Whippoorwill Rd., Bethel, Conn. 06801, and James S. Ramsey, 75 Nicholdale Rd., Shelton, Conn. 06484

Filed Nov. 10, 1988, Ser. No. 269,390
Int. Cl.[5] G06F *7/10*
U.S. Cl. 235—462 **16 Claims**



1. An apparatus for reading a bar code symbol on a full sheet, the combination comprising:

feeding means for feeding a sheet at a speed of at least 120 inches/sec,

a fixed beam scanner positioned to scan the bar code symbol on a sheet as a sheet is fed from said support means,

decoding means in communication with said scanner for decoding the bar code scanned by said scanner, and

a computer in communication with said decoder means.

5,008,521

REPRODUCING APPARATUS FOR AN OPTICAL RECORDING MEDIUM

Hiroshi Ohki; Shoei Kobayashi, and Takuya Wada, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1989, Ser. No. 330,299
Claims priority, application Japan, Apr. 6, 1988, 63-86776
Int. Cl.[5] G06K *7/10*; G07B *7/12*
U.S. Cl. 235—454 **11 Claims**

1. A reproducing apparatus comprising:

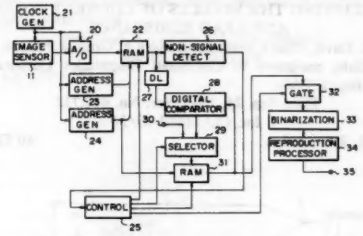
an optical recording medium from which an information signal can be optically read and onto which an information signal is discretely recorded as a plurality of recording units each comprising a plurality of track trains;

a light source;

an optical system for causing a light beam from said light source to irradiate a whole area of one of said plurality of recording units and for guiding a light beam reflected from said recording medium;

detecting means comprising a plurality of detecting elements arranged two-dimensionally for detecting said reflected beam as guided by said optical system;

extracting means for extracting a detection output of one track train of said recording unit irradiated by said light



source on the basis of an output signal of the detecting means and including a comparing means for successively comparing the detection outputs from said detecting means and a line memory means for storing an output of said comparing means; and

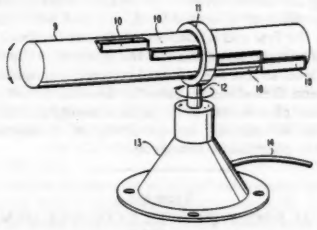
memory means for storing digitally converted detection output from said detecting means and including a first address generating circuit to generate an address in a direction parallel with said track trains and a second address generating circuit to generate an address in a direction perpendicular to the said track trains, and in which an address signal from said first address generating circuit is also supplied to said line memory means.

5,008,522

DEVICE FOR THE SELECTIVE DETECTION OF OBJECTS

Jan-Erik Lundin, Västra Frölunda, Sweden, assignor to Saab Missiles Aktiebolag, Sweden

Filed Feb. 28, 1989, Ser. No. 378,514
Claims priority, application Sweden, May 29, 1987, 8702247
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—203.6 **14 Claims**



1. A device for the selective detection of objects such as aircraft, missiles, helicopters and the like, by means of detecting outgoing rays from the objects, comprising at least one sensor unit (1) including at least one focusing means (15) arranged to focus said rays on at least one corresponding focal plane, said sensor unit including at least one radiation-sensitive detector element (16) which is positioned in said focal plane, said detector element arranged to emit signals corresponding to a level of radiation of the incoming rays, said device ar-

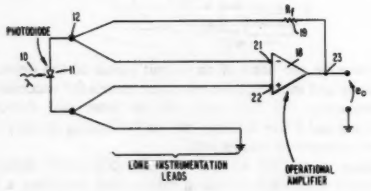
ranged to variably scan an angular field in azimuth and/or elevation, said device further comprising an evaluation unit means (2), arranged to receive said signals, for selecting objects which seem to be of similar size with respect to the angle measured from the position of the device, such objects being large objects at a long distance such as aircraft, and small objects at a short distance, such as birds, by suppressing signals whose amplitude as a function of the scanned azimuth or elevation angle shows a relatively large size compared with signals that show at relatively small size.

5,008,523

CURRENT MEASURING CIRCUIT WITH MEANS FOR NULLIFYING THE EFFECTS OF CURRENT SOURCE AND LEAD RESISTANCE

Rex M. Davis, West Chester, and Mark E. Greiner, Mason, both of Ohio, assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Sep. 26, 1989, Ser. No. 412,715
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 A **10 Claims**



1. A photodetector circuit comprising a photodiode having: (a) first and second terminals, (b) a current generator for deriving a current having an amplitude directly proportional to photons incident thereon, and (c) a resistance affecting the amount of current supplied by a current generator to the first and second terminals, a DC operational amplifier having: an inverting input terminal, a non-inverting input terminal and an output terminal, the amplifier developing a voltage between the output terminal and a reference potential level; a feedback resistor; first, second, third and fourth electric lead wires having appreciable resistance that is substantially the same for each lead wire; the first lead wire and the feedback resistor being connected in series between the first terminal and the amplifier output terminal, the second lead wire being connected between the first terminal and the inverting input terminal, the third lead wire being connected between the second terminal and the non-inverting input terminal, the fourth lead wire being connected between the second terminal and a terminal at the reference potential level, the lead wires being connected to: the first and second terminals, the feedback resistor, the amplifier input terminals and the terminal at the reference potential level so that the voltage between the amplifier output terminal and the reference potential level is directly proportional to the photon rate of the optical energy incident on the photodiode substantially independently of variations in the value of the photodiode resistance.

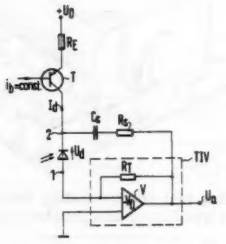
5,008,524

OPTICAL RECEIVER WITH EXTENDED DYNAMIC RANGE

Jörg Reutter, and Frank Krause, both of Stuttgart, Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Sep. 18, 1989, Ser. No. 408,626
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1988, 3832857
Int. Cl.[5] H04B *9/00*
U.S. Cl. 250—214 A **20 Claims**

1. Optical receiver comprising a photodiode and a transimpedance amplifier, with the photodiode contained in a direct-current circuit between a supply-voltage source and the input of the transimpedance amplifier, and further comprising an element limiting the direct current in the direct-current circuit and an alternating-current circuit fed from the photodiode, which acts as an AC voltage source, and containing an impedance which converts the alternating voltage of the photodiode into an alternating current flowing into the transimpedance amplifier,



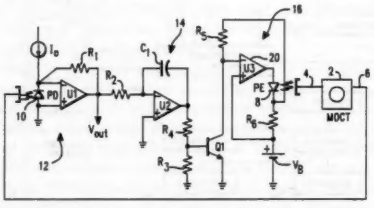
characterized in that the alternating current circuit couples the terminal (2) of the photodiode (PD) which is not connected to the input of the transimpedance amplifier (TIV) to the output (U_a) of the transimpedance amplifier.

5,008,525

CURRENT MONITORING CIRCUIT ERROR COMPENSATION

Carlo F. Petronio, Ross Township, Allegheny County, Pa., assignor to ABB Power T & D Company, Inc., Blue Bell, Pa.

Filed Aug. 3, 1989, Ser. No. 389,145
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 C **9 Claims**



9. In a measuring device including a magneto-optic current transformer defining an optical path having an input and an output and having an optical transmission characteristic such that the relation between optical energy supplied to the input and optical energy arriving at the output is a function of an electrical parameter being monitored, an electrically driven photoemitter disposed for supplying optical energy to the optical path input, photodetector circuit means optically coupled to the optical path output for producing an electrical signal representative of the optical power arriving at the output, and a control circuit connected between the photodetector circuit means and the photoemitter for controlling the light energy supplied by the photoemitter, the transformer and the control circuit together forming a high pass filter having a corner frequency, the control circuit comprising a circuit unit whose temperature influences the corner frequency value the improvement wherein said control circuit further comprises: an amplifier and first compensation means connected to form a negative feedback path of said amplifier for supplying a negative feedback signal which is linearly proportional to the optical power emitted by said photoemitter for causing the corner frequency value to be independent of the relation between the optical power at the input to the path and the optical power at

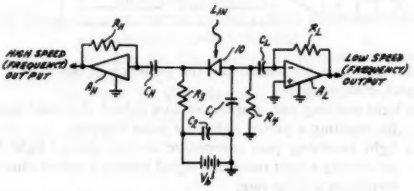
the output of the path; and second compensation means operatively connected for causing the corner frequency value to be independent of the temperature of said circuit unit.

5,008,526

PHOTODETECTOR OUTPUT COUPLING WITH LOW AND HIGH FREQUENCY OUTPUTS

Samuel I. Green, University City, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 2, 1989, Ser. No. 416,003
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 R **15 Claims**



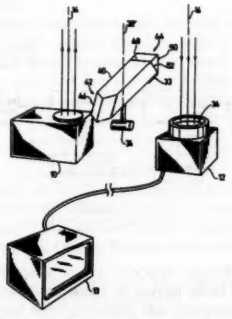
1. A photodetector output circuit, comprising:
(a) a photodetector means for detecting light impinging thereon having a first electrode and a second electrode;
(b) a first connection means for detecting high frequency components of the impinging light connected to the first electrode of the photodetector means providing a high frequency output;
(c) a second connection means for detecting low frequency components of the impinging light connected to the second electrode of the photodetector means providing a low frequency output; and
(d) electrical circuit means for analyzing the high and low frequency outputs of the photodetector means connected to the outputs of the first and second connection means.

5,008,527

OPTICAL SYSTEM EMPLOYING A TRANSMITTING SOLID CORNER CUBE

Shalom Wilk, Jerusalem, Israel, assignor to Israel Aircraft Industries Ltd., Ben Gurion International Airport, Israel

Filed Oct. 19, 1989, Ser. No. 423,118
Claims priority, application Israel, Oct. 31, 1988, 88243
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—216 **18 Claims**



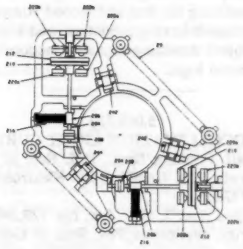
1. Optical apparatus for transferring at least a portion of radiation emitted from a radiation source having a first line of sight to a radiation sensor having a second line of sight comprising:
a corner cube having first and second reflective ends arranged to intersect at predetermined orientations with said first and second lines of sight, respectively, and each having a predetermined orientation relative thereto;
prismatic means mounted onto at least one of said first and second reflective ends so as to define a common interface therewith; and
an optical coating provided at said interface defined by said at least one of said first and second reflective ends and said prismatic means for permitting passage of a first portion of radiation while deflecting a second portion of radiation.

5,008,528

INVERTIBLE TRACKBALL

Douglas Duchon, Chanhassen, Minn., assignor to Logitech S.A., Apples, Switzerland

Filed Jul. 14, 1989, Ser. No. 380,092
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—221 **7 Claims**



1. A trackball comprising
a lower housing member,
a ball suitable for rotational manipulation by the fingers and generally accessible through the upper surface of the trackball,
a skeleton member having ball receiving means therein for receiving the ball,
a plurality of optomechanical encoders having the mechanical components thereof mounted on the skeleton member and urged into mechanical engagement with the ball, the mechanical components supporting the ball,
an upper housing member having ball retaining means and capable of being fixedly mounted to the lower housing member and thereby fixedly locating at least the skeleton member therebetween.

5,008,529

PHOTOELECTRIC SWITCHING APPARATUS OF REFLECTION TYPE PROJECTING RED AND INFRARED LIGHT

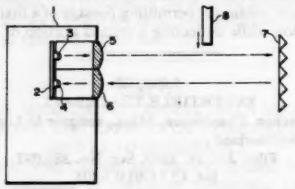
Arata Nakamura, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 310,685, Feb. 15, 1989, abandoned. This application Jul. 6, 1990, Ser. No. 551,046
Claims priority, application Japan, Feb. 15, 1988, 63-18535
Int. Cl.[5] G01V *9/04*; G01J *3/50*
U.S. Cl. 250—221 **12 Claims**

11. A method of detecting an object comprising the steps of:
projecting from a single light projecting diode a red light and an infrared light along a same optical axis;
reflecting the red light and absorbing the infrared light with a reflex reflector located at a position distant from the single light projecting means;
in a photo sensitive means individually detecting the red light reflected from the reflex detector along with red light reflected from an object to be detected and infrared light reflected from the object to be detected and outputting a pair of light detection signals corresponding to the red light and the infrared light;

adding the light detection signals in an adding means to produce an added output and comparing a level of the added output to a first threshold to produce a first comparison output;

subtracting the light detection signals in a subtraction means to produce a difference output and comparing a level of



the difference output to a second threshold to produce a second comparison output; and

logically combining the first and second comparison outputs in a logic circuit having predetermined logic and outputting an object detection signal in accordance with the predetermined logic.

5,008,530

AUTOCOLLIMATION LIGHT CURTAIN

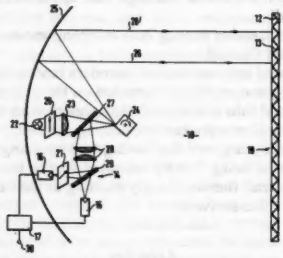
Hans-Klaus Ball, Freiburg/Brsg., Fed. Rep. of Germany, assignor to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Dec. 7, 1987, Ser. No. 129,280

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1986, 3641926

Int. Cl.[5] G01V *9/04;* G08B *13/18*

U.S. Cl. 250—221 **6 Claims**



1. Autocollimation light curtain comprising a light source; a light beam generating optical system; a light deflecting device such as a mirror wheel which receives the light beam, a reflector at the end of a monitoring region which is periodically scanned by the light beam and is subdivided in the scanning direction into a plurality of fields of two types which alternate with each other; and also a light receiving system which receives a received light beam reflected out of the beam path in front of the light deflecting device and which has a photoreceiver for receiving the light reflected back from the reflector when the monitored region is free of obstacles, characterised in that the two alternating types of fields (12, 13) of the reflector (19) have characteristics which influence the spectral range and/or the state of polarisation of the incident light; in that the light receiving arrangement (14) includes a second photoreceiver (16) which is so filtered that it receives only light reflected from the one type (12) of field but not light from the other type (13) of field, whereas the first photoreceiver responds to all light reflected back from the reflector (19); and in that both photoreceivers (15, 16) are connected to a logic circuit (17) which only signals that the monitored region is free of obstacles when the second photoreceiver (16) transmits an alternating signal and the first photoreceiver (15) transmits a dc signal.

5,008,531

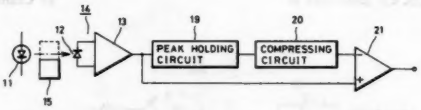
PULSED LIGHT IDENTIFYING SYSTEM

Shoichi Ono, Suwa, and Atsuhito Kobayashi, Okaya, both of Japan, assignors to Chinon Kabushiki Kaisha, Suwa, Japan

Filed Aug. 15, 1989, Ser. No. 394,067

Int. Cl.[5] G01V *9/04;* H01J *40/14*

U.S. Cl. 250—222.1 **5 Claims**



1. Apparatus for identifying the presence or absence of an object, comprising:

a light emitting part responsive to a pulsed electrical signal for emitting a pulsed light at a pulse interval;

a light receiving part responsive to said pulsed light for producing a light reception signal having a pulsed characteristic at a pulse rate;

a comparator receiving said light reception signal at a first input thereof;

a peak detection circuit including means for storing a peak value of said light reception signal;

said peak detection circuit having a time constant that is large compared to said pulse interval;

a compressing circuit;

said compressing circuit including means for producing a threshold signal equal to said peak value divided by a predetermined value; and

said threshold signal being connected to a second input of said comparator, whereby an output of said comparator is a pulse signal in synchronism with said pulsed light when there is no object intercepting said light, and which is constant when an object intercepts said light, whereby the presence or absence of said object is detectable.

5,008,532

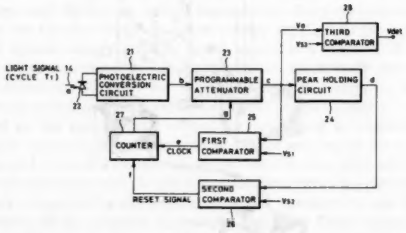
LIGHT RECEPTION SIGNAL CIRCUIT FOR PHOTOELECTRIC SWITCH

Shoichi Ono, Suwa, and Atsuhito Kobayashi, Okaya, both of Japan, assignors to Chinon Kabushiki Kaisha, Suwa, Japan

Filed Aug. 15, 1989, Ser. No. 394,213

Int. Cl.[5] G01V *9/04;* H03G *3/10*

U.S. Cl. 250—222.1 **14 Claims**



1. A photoelectric switch of a type adapted for use with a pulsating light beam having an emission period, comprising:

means for detecting said pulsating light beam to produce a light detection signal;

means for attenuating said light detection signal to produce an output signal;

means for producing a pulsating clock signal synchronized with pulsations of said pulsating light beam only when

said output signal exceeds a predetermined upper threshold;

control means, responsive to said pulsating clock signal, for producing a digital control signal;

said means for attenuating being responsive to said digital control signal to add a predetermined amount of attenuation each time said pulsating clock signal is produced; and

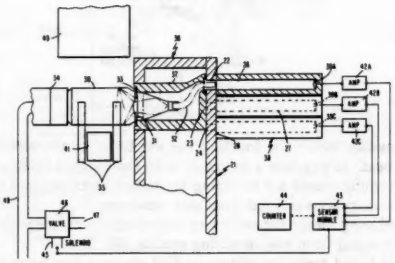
means for removing a predetermined amount of attenuation from said light detection signal when said output signal falls below a predetermined lower threshold, whereby said output signal is maintained in a range between said upper threshold and said lower threshold.

5,008,533

HIGH SPEED FIBER OPTIC CONTAINER INSPECTION APPARATUS AND METHOD

Harry W. Lee, Jr., Bon Air, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Jan. 29, 1990, Ser. No. 471,586
Int. Cl.[5] G01N *9/04*
U.S. Cl. 250—223 B **18 Claims**



1. A light testing apparatus for testing a plurality of container like objects moving in series order along a prescribed path, said path including a portion irradiated by a light source, said apparatus comprising:

a plurality of light conducting means for conducting light, one of said plurality associated respectively with each said object for movement therewith in position to be shielded by said object from said light source; and

sensing means responsive to light conducted by said light conducting means, whereby a defect in said object, permitting light transmission from said light source through said defect to said light conducting means, can be determined, wherein

said sensing means comprises a light sensing unit, said unit comprising a light sensor disposed within a stationary housing, said housing having an end panel thereof provided with an aperture, said aperture having a slot configuration, said aperture positioned to face said light conducting means.

5,008,534

CONTACTLESS SWITCH HAVING TRANSLATING FOCUSING/DEFOCUSING LENS

Tatsushi Yonezawa, Takatsuki, and Satosi Nozoe, Kyoto, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 30, 1989, Ser. No. 400,654
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—229 **14 Claims**

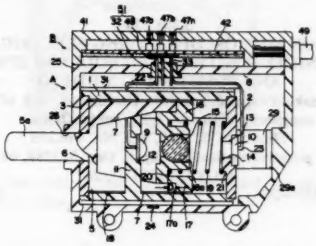
1. A contactless switch, comprising:

a casing defining an axial bore;

a light emitting element disposed in said bore to produce a light beam directed in an axial direction of said axial bore;

a light receiving element disposed in said bore opposite to said light emitting element defining a certain axial space therebetween;

a lens carrier carrying a lens element and interposed between said light emitting element and said light receiving element in an axially slidable manner; and



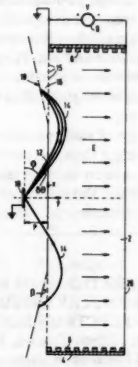
a plunger member having one end projecting axially out of one of axial ends of said casing and another end engaging with said lens carrier.

5,008,535

ENERGY ANALYZER AND SPECTROMETER FOR LOW-ENERGY ELECTRONS

Gerardus G. P. Van Gorkom, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 29, 1989, Ser. No. 400,182
Claims priority, application Netherlands, Sep. 2, 1988, 8802170
Int. Cl.[5] H01J *40/00*
U.S. Cl. 250—305 **28 Claims**



1. An energy analyzer for low-energy electrons comprising

(a) an electrically insulating tubular section having rotational symmetry disposed about an analyzer space, a homogeneous and uniform electrical field being generated in said analyzer space, said analyzer space including an entrance aperture and an exit aperture, said exit aperture being an annular slot,

(b) a helical electrical resistance layer disposed at an inner side of said tubular section, said helical electrical resistance layer being coaxial with said tubular section,

(c) an electrical conductor disposed at ends of said tubular section, and

(d) detector means for detecting electrons emanating from said exit aperture, said detector means including an annular, flat channel plate arranged opposite to said exit aper-

ture, said annular, flat channel plate being concentric with said exit aperture,

wherein said energy analyzer comprises an anode, said anode including a number of anode rings electrically insulated from one another, said number of anode rings being electrically interconnected in a two-by-two fashion.

5,008,536

ELECTRON MICROSCOPE HAVING ELECTRICAL AND MECHANICAL POSITION CONTROLS FOR SPECIMEN AND POSITIONING METHOD

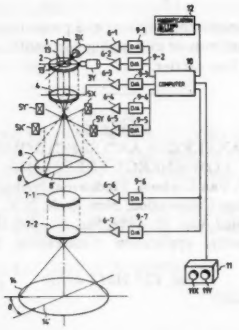
Shigeto Isakozawa, and Takahito Hashimoto, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 5, 1989, Ser. No. 446,283

Claims priority, application Japan, Dec. 5, 1988, 63-307278

Int. Cl.[5] H01J *37/26*

U.S. Cl. 250—307 **11 Claims**



9. A specimen and image position controlling method, for use in an electron microscope, comprising the steps of:

setting a magnification of the electron microscope;

setting a moving distance and a moving direction of a stage on which said specimen is placed;

comparing the setting of magnification with a predetermined magnification value;

shifting only an image of said specimen when the setting of magnification is larger than the predetermined value; and

shifting only the specimen in a certain direction and for a certain distance when the setting of magnification is not larger than the predetermined value.

5,008,537

COMPOSITE APPARATUS WITH SECONDARY ION MASS SPECTROMETRY INSTRUMENT AND SCANNING ELECTRON MICROSCOPE

Hiroshi Toita, Katsuta; Hifumi Tamura, Hachioji; Issei Tobita, Ibaraki, and Hiroshi Iwamoto, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Instrument Engineering Co., Ltd., Ibaraki, both of, Japan

Filed Sep. 20, 1989, Ser. No. 409,761

Claims priority, application Japan, Sep. 22, 1988, 63-236351

Int. Cl.[5] H01J *37/26*

U.S. Cl. 250—309 **16 Claims**

1. A composite apparatus with secondary ion mass spectrometry instrument and scanning electron microscope comprising:

at least one kind of liquid metal ion source;

an ion source other than said liquid metal ion source;

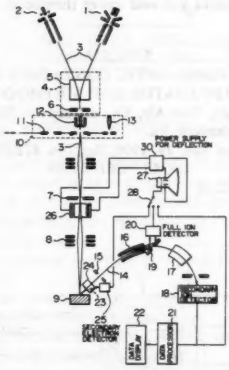
a primary ion separating device for mass-separating an ion beam emitted from said ion source other than said liquid metal ion source;

deflecting means for bringing the ion beam from said ion source other than said liquid metal ion source into alignment with a primary beam axis which is an optical axis of an irradiating system;

moving means for moving a position of said liquid metal ion source so that an ion beam emitted from said liquid metal ion source is aligned with said primary beam axis;

an electron gun for emitting an electron beam;

moving means for moving a position of said electron gun so that the electron beam emitted from said electron gun is aligned with said primary beam axis;



focusing means for focusing the ion beam or the electron beam to irradiate a specimen with the focused beam;

detecting means for detecting secondary electrons and secondary ions emitted from said specimen;

analyzing means for analyzing said specimen on the basis of a signal from said detecting means; and

said liquid metal ion source or said electron gun being disposed between said primary ion separating device and said specimen.

5,008,538

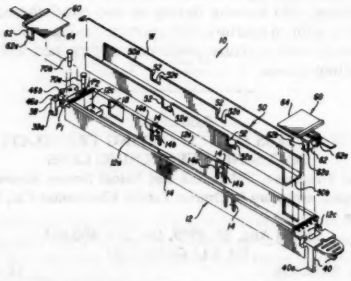
CORONA CHARGER APPARATUS OF SIMPLIFIED CONSTRUCTION

Michael L. DeCecca, Fairport; Michael S. Kowalczyk, Rochester; Thomas W. Gray, Rochester, and Paul W. Partridge, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1989, Ser. No. 389,192

Int. Cl.[5] H01T *19/04*

U.S. Cl. 250—324 **9 Claims**



1. A corona charger apparatus comprising:

a conductive corona wire;

a generally U-shaped conductive shield;

a pair of non-conductive end caps; and

a generally U-shaped non-conductive housing, said housing

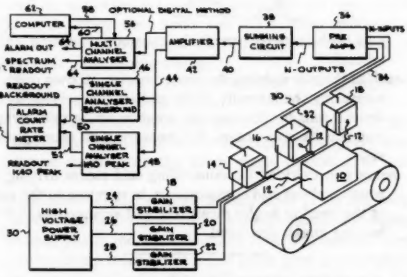
being formed with a plurality of respective integral features which include a plurality of clips respectively having a surface engaging an edge surface of said shield, and at least one cantilever beam spring urging said shield in a direction where said clip surfaces are in held in positive engagement with said edge surfaces of said shield to retain and accurately space said shield within the housing, and further integral features which locate and properly tension said corona wire, support electrical terminals, retain and locate said end caps, and enable the assembled apparatus to be accurately located by an unskilled operator.

5,008,539

PROCESS AND APPARATUS FOR DETECTING PRESENCE OF PLANT SUBSTANCES

John A. Kirby, Las Vegas, Nev., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 1, 1990, Ser. No. 561,633
Int. Cl.[5] G01N *33/00*; G01T *1/20*
U.S. Cl. 250—336.1 **17 Claims**



1. A process for detecting the presence of plant substances in a particular environment which comprises the steps of:

(a) measuring the background K40 gamma ray radiation level in a particular environment with a 1.46 MeV gamma ray counter system;

(b) measuring the amount of K40 gamma ray radiation emanating from a package being passed through said environment with said counter; and

(c) signaling the presence of plant substances by generating an alarm signal when the total K40 gamma ray radiation reaches a predetermined level over and above the background level.

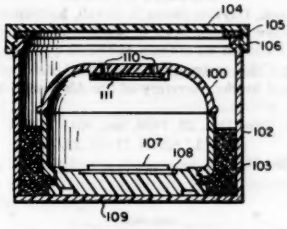
5,008,540

ELECTRET GAMMA/X-RAY LOW LEVEL DOSIMETER

John C. Dempsey, Frederick, Md., assignor to Rad Elec Inc., Frederick, Md.

Continuation-in-part of Ser. No. 936,240, Dec. 1, 1986, Pat. No. 4,853,536. This application Jul. 31, 1989, Ser. No. 387,497
Int. Cl.[5] G01T *1/14*
U.S. Cl. 250—336.1 **37 Claims**

1. An apparatus for monitoring gamma or X-ray radiation comprising a chamber having an inner surface which is electrically conductive, an electret positioned within the chamber for holding an electrostatic charge which collects ions formed in the chamber by bombardment of gamma or X-ray radiation, and a removable means connected with the chamber for



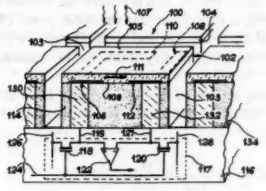
mounting the electret, said chamber enclosed in a radioactive gas tight container.

5,008,541

MONOLITHIC DETECTION OR INFRARED IMAGING STRUCTURE AND ITS PRODUCTION PROCESS

Luc Audaire, Grenoble; Jean C. Peuzin, Herbeys, and Bernard Schaub, Lans-En-Vercors, all of France, assignors to Commissariat Energie Atomique, Paris, France

Filed Nov. 17, 1989, Ser. No. 438,768
Claims priority, application France, Nov. 29, 1988, 88 15581
Int. Cl.[5] H04N *5/33*; G01J *5/10*
U.S. Cl. 250—338.3 **12 Claims**

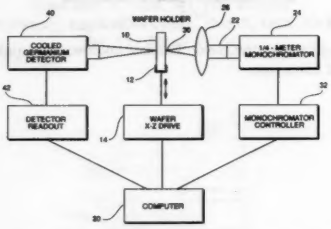


1. A monolithic detection or infrared imaging structure comprising at least one electrically and thermally insulating polymer layer (**114**, **216**, **218**, **220**), infrared sensors (**102**, **102*a***, **102*b***, **102*c***, **102*d***), which are insulated from one another and have a pyroelectric polymer film (**104**), whose face (**109**) in contact with the insulating layer (**114**) is equipped with two comb-shaped electrodes (**106**, **108**), whose teeth (**110**, **112**) are imbricated, the pyroelectric polymer film (**104**) being polarized (**111**) in a plane parallel to said face of the film in directions parallel (x) and perpendicular (y) to the teeth of the combs, an integrated circuit (**116**) having a face (**134**) in contact with the insulating layer (**114**) equipped with reading circuits (**117**, **117*a***, **117*b***, **117*c***, **117*d***) and electrical contact zones (**130**, **132**, **222**, **224**, **226**) completely traversing the insulating layer and connecting the electrodes (**106**, **108**) of each sensor to a reading circuit (**117**, **117*a***, **117*b***, **117*c***, **117*d***).

5,008,542
METHOD AND SYSTEM FOR AUTOMATED MEASUREMENT OF WHOLE-WAFER ETCH PIT DENSITY IN GAAS

David C. Look, Dayton; James S. Sewell, Kettering; Millard G. Mier, Yellow Springs; John R. Sizelove, Kettering; Dennis C. Walters, Fairborn, all of Ohio, and Scott C. Dudley, Air Force Academy, Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 20, 1989, Ser. No. 456,924
Int. Cl.[5] G01N *21/88, 21/35*
U.S. Cl. 250—341 **11 Claims**



4. A method for producing a map of etch pit density in a GaAs wafer surface, comprising the steps of:

a. determining etch pit density (ρ_D) at at least two points on said GaAs wafer surface;

b. focusing a light source of predetermined wavelength at a plurality of points on said GaAs wafer surface;

c. detecting the fractional transmission (T) of said light source through said GaAs wafer surface at said plurality of points;

d. selecting two locations on said GaAs surface where one of said at least two points in step a is in common with one of said plurality of points in step c; one of the locations being in an area of said GaAs wafer surface having relatively high transmission and other in an area having relatively low transmission;

e. determining the average area (a) of etch pits on said GaAs wafer surface;

f. calibrating a reference transmission point (T_O) from the fractional transmission and the etch pit density at one of said two locations in step d where the transmission is high;

g. calibrating a reference transmission point (T_E) from the fractional transmission and etch pit density at the other of said two locations in step d where the transmission is low; and

h. generating a map of etch pit density (ρ_D) at each of said plurality of points according to the equation

$$\rho_D = -\frac{1}{a}\ln\frac{T^4 - T_E^4}{T_O^4 - T_E^4}$$

5,008,543
SYSTEM FOR DETERMINING THE POSITION OF AT LEAST ONE TARGET BY TRIANGULATION

Michel P. Bertrand, Fontenay-Sous-Bois; Michel B. Bucher, Paris, and André R. Delclaux, Champigny sur Marne, all of France, assignors to Sat(Societe Anonyme De Telecommunications, France

Filed Jan. 17, 1990, Ser. No. 466,501
Claims priority, application France, Jan. 18, 1989, 89 00531
Int. Cl.[5] G01C *3/08, 3/20*
U.S. Cl. 250—342 **10 Claims**

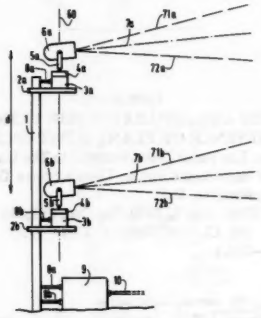
1. A system for determining the position of at least one target emitting radiation, comprising:

two passive sighting devices, sensitive to said radiation, disposed at a distance from each other and movable in rotation about a substantially vertical common axis,

means for measuring the intensity of the radiation received by one of the sighting devices along a sighting line scanning a substantially vertical sighting plane, common to the two sighting devices,

means for extracting, in response to the intensities measured, the values of the elevation angles of said target relatively to the two sighting devices, and

means for computing, in response to the values of the elevation angles, the distance of said target by triangulation in



said substantially vertical common sighting plane, wherein

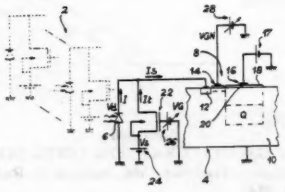
each of the two sighting devices comprises its own means for measuring the intensity of the radiation received, its own drive means for driving it in rotation about said common axis and its own means for measuring its bearing angle, and

means are provided for controlling said means driving it in rotation about said common axis, in response to the values of the bearing angles measured, and arranged so that said bearing angles are equal.

5,008,544
SYSTEM FOR THE DETECTION OF INFORMATION IN THE FORM OF ELECTROMAGNETIC RADIATION AND READING THE DETECTED INFORMATION

Pierre Nicolas, Saint Egreve, and Philippe Pantigny, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 19, 1989, Ser. No. 382,427
Claims priority, application France, Aug. 1, 1988, 88 10375
Int. Cl.[5] H01L *31/09;* **G01J** *5/06*
U.S. Cl. 250—349 **10 Claims**



1. System for the detection of information in the form of electromagnetic radiation and reading the detected information, said system comprising information photodetection means, which have N photodetectors, each photodetector being able to supply a current having an information carrier component and a component not carrying information, N being an integer at least equal to 1, and means for reading the information detected in this way and using for this purpose the

current supplied by each photodetector and N other regulatable means respectively associated with the N photodetectors, each other regulatable means being able to remove a current of regulatable intensity from the current supplied by the associated photodetector prior to the use of the latter current by the reading means so as to remove the component not carrying information from the current supplied by the respective photodetector.

5,008,545

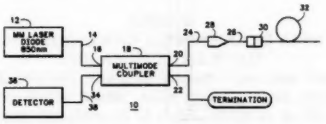
HIGH RESOLUTION OPTICAL FAULT LOCATOR

Duwayne R. Anderson; Robert W. McMahon, both of Redmond, and Barry L. Rosenow, Bend, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 23, 1989, Ser. No. 425,770

Int. Cl.[5] G01N *21/45*

U.S. Cl. 250—358.1 **5 Claims**



1. An optical fault locator for examining a single mode optical fiber under test wherein optical pulses are input into the single mode optical fiber under test and a return optical signal is received from the single mode optical fiber under test, the optical fault locator comprising:

a high power, short wavelength optical power source for generating the optical pulses;

an optical detector compatible with the high power, short wavelength optical power source for receiving the return optical signal from the single mode optical fiber under test;

a multimode optical coupler having input ports and output ports with each input port having associated multiple output ports, the optical pulses from the optical power source being received at a first input port and coupled to an output multimode optical fiber connected to one of the output ports associated with the first input port and the return optical signal being received at a second input port and coupled to the optical detector connected to one of the output ports associated with the second input port, the multimode optical coupler equally dividing the optical power of each propagating mode from the optical source and the return optical signal between the associated output ports of the input ports; and

a single mode optical fiber spliced to the output multimode optical fiber, the single mode fiber having a connector for coupling the single mode optical fiber under test to the optical fault locator.

5,008,546

INTRAOPERATIVE BETA PROBE AND METHOD OF USING THE SAME

John C. Mazziotta, Beverly Hills, Calif.; Farhad Daghighian, New York, N.Y., and Edward J. Hoffman, Van Nuys, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 18, 1990, Ser. No. 539,794

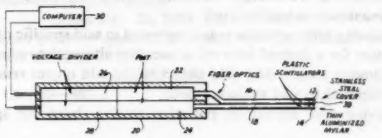
Int. Cl.[5] G01T *1/161, 1/20, 1/203*

U.S. Cl. 250—366 **20 Claims**

1. A probe system for preferentially detecting beta radiation over background gamma radiation from a source of beta and gamma radiation comprising:

a first means for detecting beta and gamma radiation at an arbitrarily selected location; and

a second means for selectively detecting only one type of radiation of said beta and gamma radiation, said second and first means coupled together,



whereby beta radiation from near sources is reliably detected and differentiated from gamma radiation emitted from far sources.

5,008,547

DENTAL X-RAY IMAGE DETECTION SYSTEM

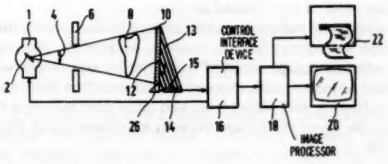
Roberto Molteni, and Giulio Zanmarchi, both of Monza, Italy, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 30, 1989, Ser. No. 444,930

Claims priority, application European Pat. Off., Dec. 8, 1988, 88202809.5

Int. Cl.[5] A61B *6/14*

U.S. Cl. 250—368 **18 Claims**



1. A dental X-ray detection system for detecting at least one tooth at a time, said system including an optically sensitive sensor optically coupled to a luminescent screen, an optical fibre device for coupling said screen to said sensor comprising in combination with said screen and sensor:

at least one optical fibre having an optical axis, said at least one fibre having first and second end surfaces, one end having a first surface oblique with respect to said optical axis, said first surface defining a first area of a given magnitude, one of said end surfaces comprising means for receiving an X-ray image transmitted thereto by said luminescent screen, said second end surface defining a second area of a second magnitude different than the first area magnitude, the other of said surfaces comprising means for transmitting said received image to said sensor, said device further comprising a cascade of two optically coupled fibre optics devices each comprising means for reducing a dimension of the received X-ray image independently of each other.

5,008,548

PERSONAL UV RADIOMETER

Nahum Gat, 1227 9th St., Manhattan Beach, Calif. 90266

Filed Aug. 1, 1989, Ser. No. 388,115

Int. Cl.[5] G01J *5/32*

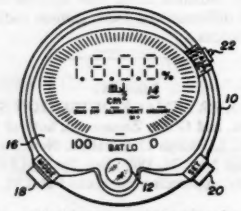
U.S. Cl. 250—372 **36 Claims**

1. In the method of preventing overexposure of an object located in a three dimensional field of ambient ultraviolet radiation of the range of 250 to and including 400 nanometers in wavelength in which such radiation travels toward the object from a plurality of directions, said method including the steps of monitoring ultraviolet radiation dosage by means of a ultraviolet radiation dosimeter and removing or covering said object upon attainment of predetermined exposure to prevent significant additional radiation from reaching said object, the improvement in which the step of monitoring radiation dosage includes the steps of:

moving an ultraviolet radiation sensor about the space surrounding said object to determine the specific direction from which ultraviolet radiation of 250 through 400 nanometers in wavelength traveling toward said object is of a maximum intensity level;

retaining said radiation sensor oriented in said specific direction for a desired interval to monitor ultraviolet radiation dosage received by said object while said object remains exposed to said radiation field;

moving said ultraviolet radiation sensor about the space



surrounding said object to re-determine the specific direction from which said ultraviolet radiation traveling toward said object is of a maximum intensity level after the lapse of said desired interval;

retaining said radiation sensor oriented in said specific direction as redetermined to continue to monitor ultraviolet radiation dosage received thereafter by said object while said object remains exposed to said radiation field; and

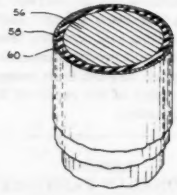
withdrawing said object from said ultraviolet radiation field in the event the dosage exceeds a predetermined threshold.

5,008,549

HIGH PERFORMANCE, VACUUM COMPATIBLE ELECTROMAGNETIC LENS COIL

Albert V. Crewe, Palos Park, Ill., assignor to Orchid One Corporation, Palos Hills, Ill.

Filed Apr. 10, 1990, Ser. No. 507,170
Int. Cl.[5] H01F 7/22
U.S. Cl. 250—396 ML **30 Claims**



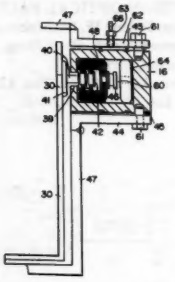
1. A high performance, vacuum compatible electromagnetic electron lens coil for electron beam systems having reduced gaseous emissions and improved heat dissipation capability, comprising a wound coil of electrically conductive wire sheathed in a selected thermoplastic resin insulator, said wire insulator being coated with a hermetic layer of low vapor pressure metal, the low vapor pressure and hermetic sealing properties of the layer providing ultra high vacuum compatibility of the coil, while the high thermal conduction property of the layer provides high heat dissipation capability and therefore permits high current densities in the coil, whereby said coil can provide low cost, highly efficient, high electromagnetic performance in an unsealed state in a high vacuum environment.

5,008,550

CONVEYOR SYSTEM FOR IRRADIATED FOOD PRODUCTS

Lawrence G. Barrett, Lynchburg, Va., assignor to Applied Food Processors, Inc., Lynchburg, Va.

Division of Ser. No. 184,878, Apr. 22, 1988, Pat. No. 4,908,221, which is a division of Ser. No. 819,254, Jan. 16, 1986, Pat. No. 4,760,264. This application Nov. 27, 1989, Ser. No. 441,642
Int. Cl.[5] A23L 3/26
U.S. Cl. 250—453.1 **7 Claims**



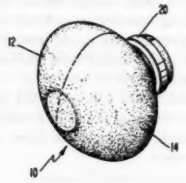
1. A conveyor system for conveying food products through an irradiator, said conveyor system comprising a plurality of baskets with walls, each of said baskets having at least one shaft extending outwardly from one of said walls in a generally horizontal fashion, said system further comprising a first roller chain connected to said shafts, said roller chain being attached to a plurality of spaced chain guides with slots for moveably receiving said chain, said chain and said guides being independently removably positioned within a first generally rectangular casing.

5,008,551

PHOSPHORESCENT LUMINOUS DOOR KNOBS COVER

Timothy T. Randolph, 1415 Alameda Dr. S., Lakeland, Fla. 33805

Filed May 16, 1989, Ser. No. 352,805
Int. Cl.[5] F21K 2/00
U.S. Cl. 250—462.1 **4 Claims**



1. A luminescent door knob cover comprising:

a first rigid cover member having a first part that conforms to a first half of a door knob and having an integral second part that conforms to a first half of a door knob neck;

a second rigid cover member having a first part that conforms to a second half of said door knob and having an integral second part that conforms to a first half of said door knob neck;

said first and second parts of said respective first and second cover members being formed entirely of a hardened carrier means having phosphorescent powder admixed therein;

said carrier means having a predetermined thickness;

an annular band disposed in circumscribing relation to said integral second parts of said first and second cover members when said first and second cover members are dis-

posed in overlying relation to said door knob and in confronting relation to one another;

said first and second cover members exhibiting bilateral symmetry with respect to one another;

a parting line being formed where said first and second cover means meet when disposed in confronting relation to one another;

a hinge means hingedly connecting together said first and second cover members;

said hinge means being formed at a preselected location in axial alignment with said parting line; and

said hinge means being formed by a substantially reduced thickness of carrier means.

5,008,552

DATA RECORDING AND REPRODUCING APPARATUS FOR AN OPTICAL CARD

Wataru Kuramochi, Kawagoe; Yoshiaki Tsuruoka, Funabashi; Norikazu Saitou, Fuchu; Akira Shibuya, Ageo, and Shuichi Yamashita, Shinjuku, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

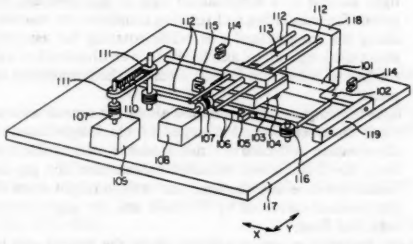
PCT No. PCT/JP88/00142, § 371 Date Oct. 7, 1988, § 102(e) Date Oct. 7, 1988, PCT Pub. No. WO88/06335, PCT Pub. Date Aug. 25, 1988

PCT Filed Feb. 12, 1988, Ser. No. 274,994

Claims priority, application Japan, Feb. 12, 1987, 62-18978; Feb. 12, 1987, 62-30583; Feb. 12, 1987, 62-30586; Mar. 31, 1987, 62-78040; Jun. 11, 1987, 62-146086; Jun. 11, 1987, 62-146087

Int. Cl.[5] G06K *13/06, 13/24*

U.S. Cl. 235—483 **6 Claims**



1. A data recording apparatus for use in an optical card on which a plurality of tracks are arranged in parallel, said apparatus comprising:

card supporting means for supporting a lower surface of said optical card;

card pressing means for pressing down on an upper surface of said optical card;

positioning means formed on said supporting means to contact or be spaced away from a first side surface of said optical card;

pushing means for pushing a second side surface, which is opposite to said first side surface, of said optical card so as to make said first side surface contact said positioning means;

card drive means for reciprocating said card supporting means in a first direction;

an optical head for selectively providing access to respective tracks on said optical card to irradiate a light beam at a position above said optical card to conduct recording of data; and

head drive means for reciprocating said optical head in a second direction perpendicular to said first direction.

5,008,553

ELECTRON BEAM LITHOGRAPHY METHOD AND APPARATUS

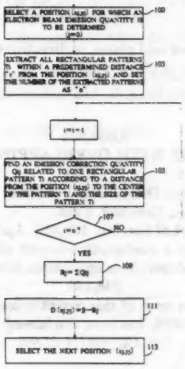
Takayuki Abe, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 24, 1989, Ser. No. 341,977

Claims priority, application Japan, Apr. 22, 1988, 63-99505; Nov. 10, 1988, 63-284771

Int. Cl.[5] H01J *37/304*

U.S. Cl. 250—492.2 **19 Claims**


SELECT A POSITION (xj,yj) FOR WHICH AN ELECTRON BEAM EMISSION QUANTITY IS TO BE DETERMINED
EXTRACT ALL RECTANGULAR PATTERNS Ti WITHIN A PREDETERMINED DISTANCE "r" FROM THE POSITION (xj,yj) AND SET THE NUMBER OF THE EXTRACTED PATTERNS AS "n"
i=1
FIND AN EMISSION CORRECTION QUANTITY Qij RELATED TO ONE RECTANGULAR PATTERN Ti ACCORDING TO A DISTANCE FROM THE POSITION (xj,yj) TO THE CENTER OF THE PATTERN Ti AND THE SIZE OF THE PATTERN Ti
i=n ?
NO
YES
Rj= ΣQij
D (xj,yj) =S−Rj
SELECT THE NEXT POSITION (xj,yj)

1. A method of writing a pattern involving various shapes on a sample with charged beams, by finding optimum charged beam emission quantities for respective positions (xj, yj) in each of the shapes and writing the shapes with charged beams of the optimum emission quantities, for each of the positions (xj, yj), the method comprising the steps of:

(a) extracting shapes Ti which exist at least partly within a distance "r" from the position for which the optimum charged beam emission quantity is to be found in question;

(b) finding emission correction quantities Qij related to the shapes Ti according to distances from the position in question to about the centers of the shapes Ti and the sizes of the shapes Ti to compensate backward scattering effects on the position in question caused by the shapes Ti;

(c) finding a total emission correction quantity Rj for the position in question by summing up the emission correction quantities Qij related to the shapes Ti; and

(d) determining an optimum emission quantity for the position in question by using the total emission correction quantity Rj and a predetermined emission quantity S.

5,008,554

MULTI-PLATE OPTICAL SIGNAL PROCESSING APPARATUS WITH INTER-PLATE OPTICAL COMMUNICATION

Toshifumi Asakawa, Yamato, and Haruo Nakayama, Kawanishi, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 29, 1989, Ser. No. 373,932

Claims priority, application Japan, Jul. 4, 1988, 63-166168

Int. Cl.[5] G02B *27/00*

U.S. Cl. 250—551 **10 Claims**

1. An optical signal processing apparatus comprising:

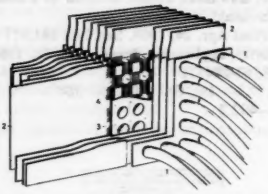
a plurality of plates disposed in parallel, spaced from each other;

light LSIs mounted on each of said plates;

lead wires electrically interconnecting said light LSIs to transfer signals among said light LSIs in directions along said plates; and

optical means extending in directions transverse to said

plates and utilizing light emitted and received by said light LSIs to transfer signals among light LSIs mounted on



different ones of said plates, in directions transverse to said plates.

5,008,555

OPTICAL PROBE WITH OVERLAPPING DETECTION FIELDS

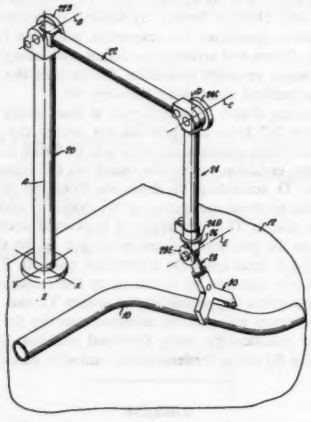
David J. Mundy, San Diego, Calif., assignor to Eaton Leonard Technologies, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 179,496, Apr. 8, 1988, Pat. No. 4,849,643, which is a continuation-in-part of Ser. No. 98,510, Sep. 18, 1987, abandoned. This application May 2, 1989, Ser. No. 346,123

The portion of the term of this patent subsequent to Jul. 18, 2006, has been disclaimed.

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—560 **37 Claims**



1. An optical probe comprising:

a working head,

first and second mutually spaced light sensors mounted to said working head,

first and second point light sources mutually spaced from each other and from said sensors mounted to said working head, said light sources configured and arranged to project first and second light beams toward said first and second sensors, respectively, though a sensitive region adjacent said sensors,

both said sensors having at least portions thereof occluded by presence in said sensitive region of an occluding object of which position is to be measured, and

means responsive to said sensors for generating a set of signals that collectively define position of an occluding object relative to said working head in a reference system fixedly related to the working head.

5,008,556

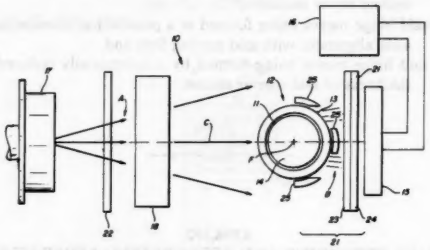
MEASURING A GAP BETWEEN A TUBE AND A FLOAT

Steven H. Mersch, Germantown, Ohio, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jul. 24, 1989, Ser. No. 383,786

Int. Cl.[5] G01N *21/86*; G01B *11/00*

U.S. Cl. 250—560 **17 Claims**



1. An apparatus to determine the radial dimension of a gap including a material between a transparent or translucent tube and a cylindrical float located substantially concentrically within the tube comprising:

a monochromatic light source which provides an elliptically polarized light beam along an optical axis at the wavelength for which the materials of the tube and the gap are transparent or translucent and the index of refraction of the material of the tube is greater than the index of refraction of the material in the gap;

a light beam focusing means positioned in alignment with the optical axis to receive the polarized light beam for converting the light beam to a line of light in a plane;

means for translating and rotating an assembly of the tube and the cylindrical float through the plane with the line of light normal to a longitudinal axis of the assembly, the means for translating and rotating translates the assembly along the longitudinal axis while rotating the assembly about the longitudinal axis to produce an illumination with the line of light from at least a part of the assembly in the plane;

a light filtering means positioned along the optical axis beyond the assembly and arranged to, block light from the illumination reflected by the assembly and block light from the illumination refracted by the tube, the gap between the tube and the float and transmit light from the illumination refracted by the tube and the gap between tube and float;

light detection means positioned along the optical axis beyond the light filtering means to receive light transmitted by the light filtering means, the light detection means capable of generating signals responsive to the light received; and

signal processing means associated with said light detection means for processing signals therefrom.

5,008,557

POSITION DETECTOR FOR MOVING VEHICLE

Akio Noji; Kenji Kamimura, and Sadachika Tsuzuki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1990, Ser. No. 484,041

Claims priority, application Japan, Mar. 1, 1989, 1-46408

Int. Cl.[5] G01N *21/86*; G01V *9/04*

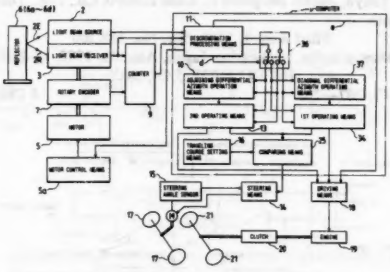
U.S. Cl. 250—561 **11 Claims**

1. A position-detecting system for a moving vehicle wherein the position of the moving vehicle is detected by scanning the light beam emitted from a light beam emitting means mounted on the moving vehicle in the circumferential direction centering around the moving body, and receiving the light beam reflected from light-reflecting means disposed at at least three

positions by means of a light-receiving means mounted on the moving vehicle, comprising;

a light beam scanning means provided on the moving vehicle for scanning the light beam in the circumferential direction centering around the moving vehicle,

an azimuth detecting means for detecting the azimuthes of the respective light-reflecting means on the basis of the light-receiving intervals of the light-receiving means, differential azimuth operation means for operating the differential azimuthes between the reference points



viewed from the moving vehicle on the basis of the azimuthes,

a means for detecting the distance between the source of the reflected light received at the light-receiving means and the moving vehicle,

a means for calculating the position of the moving vehicle on the basis of the positional information and azimuthes of the reference points, and

a means for reducing the rotational speed of the light beam scanning means in response to the operation of the distance detecting means.

5,008,558

SYSTEM FOR DETECTING MINUTE PARTICLES ON OR ABOVE A SUBSTRATE

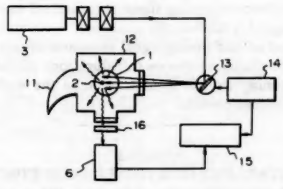
Masao Koshinaka; Minoru Akiyama; Hitoshi Tanaka, and Toshimasa Tomoda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1989, Ser. No. 373,801

Claims priority, application Japan, Oct. 12, 1988, 63-257780

Int. Cl.[5] G01N *21/88*

U.S. Cl. 250—563 **7 Claims**



1. A fine-particle detecting apparatus for detecting fine particles disposed on the surface of a substrate for a semiconductor device and fine particles suspended in the space above the surface of said substrate by the use of scattering of a laser beam caused by these fine particles, comprising:

a laser beam scanning mechanism for irradiating a measuring space with a laser beam, said mechanism including means for relatively minutely modulating the angular position of the laser beam at a predetermined frequency;

a photodetector which receives light scattered by any of said fine particles and converts the received light into an electrical signal; and

a signal processor which extracts from the electrical signal output by said photodetector a signal component whose frequency is an integral multiple of said predetermined frequency for said minute scanning with the laser beam and which has a constant phase difference over time with respect to said predetermined frequency.

5,008,559

METHOD FOR OPERATING AN OPTICAL SMOKE DETECTOR AND OPTICAL SMOKE DETECTOR FOR THE METHOD

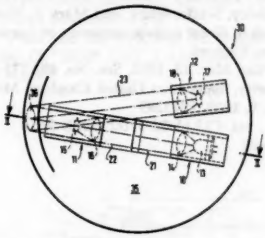
Hartwig Beyersdorf, Travemunder Allee 6a, 2400 Lubek, Fed. Rep. of Germany

Filed Sep. 6, 1989, Ser. No. 403,282

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1988, 3831654

Int. Cl.[5] G01N *15/06*

U.S. Cl. 250—575 **14 Claims**



1. An optical smoke detector, comprising a highly light-absorbing detector chamber (36), a light source (10) generating a light beam and a first and second light-sensitive receiver (11, 12) each co-operating with said detector chamber and having a limited field of view, wherein the field of view of said first light-sensitive receiver (11) intersects the radiation path of the light source (10) and the field of view of said second light-sensitive receiver (12) is exclusively directed onto a surface area of the detector chamber radiated by said light source, the detector further comprising an alarm circuit (48) generating an alarm signal when the output signal of the first light-sensitive receiver (11) reaches a predetermined value and a control circuit (41) connected to at least said second receiver generates a control signal when the output signal of said second light-sensitive receiver (12) reaches a predetermined value, and processing means processing the output signals of the first and the second receivers to provide an input signal for said alarm circuit and said control circuit, respectively, the processing means having two different modes, with one mode only the output signal of said first receiver and with the other mode only the output signal of said second receiver being processed.

5,008,560

LOAD TOTALIZING BLOCKED THROWOVER CONTROL

Roger Kieren, Grosse Pointe Woods; David A. Jamison, Livonia, and John J. Thomas, Rochester, all of Mich., assignors to The Detroit Edison Company, Detroit, Mich.

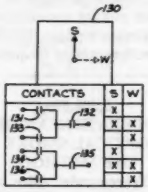
Filed Feb. 23, 1989, Ser. No. 314,049

Int. Cl.[5] H02J *3/04, 3/38*

U.S. Cl. 307—19 **10 Claims**

1. In an electric utility sub-station having two power systems each comprising a transformer which transmits electrical energy to customers over services lines, throwover means operative, when a failure occurs in either system, to switch the lines of the failed system to the transformer of the other system so that said transformer of said other system then carries the load of both systems, means responsive to a failure in one of said

systems to activate said throwover means, load sensing means for sensing the total demand load on both said transformers, and blocking means responsive to the sensing by said load



sensing means of total demand load in excess of a predetermined maximum allowable value for blocking the operation of said throwover means.

5,008,561

DEVICE DEPOWERING APPARATUS

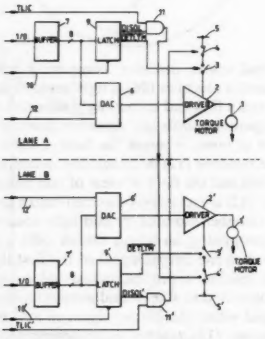
David R. Madeley, Staffordshire, and Mark S. Binet, Gloucestershire, both of Great Britain, assignors to Lucas Industries, Birmingham, England

Filed Mar. 13, 1990, Ser. No. 492,773

Claims priority, application United Kingdom, Mar. 16, 1989, 8906066; Jun. 9, 1989, 8913289

Int. Cl.[5] H02J *1/00*; G05B *9/03*

U.S. Cl. 307—80 **14 Claims**



1. A device depowering apparatus for driving first and second loads, said apparatus comprising:

first and second channels for respectively driving the first and second loads, each of said first and second channels comprising

a device power supply line;

switch means, operatively connected with said device power supply line, for depowering one of the first and second loads corresponding thereto; and

control means for closing said switch means and supplying an other channel deselect signal in response to a channel select signal and for opening said switch means in response to an other channel deselect signal from said control means of an other of said first and second channels.

14. A method for depowering one of first and second channels respectively driving first and second loads via a power supply, said method comprising the steps of:

(a) receiving, at the first channel, input control data and a channel selection signal;

(b) generating, at the second channel, a channel deselect signal based on the input control data and the channel selection signal;

(c) generating, at the first channel, a de-energize signal based on the input control data; and

(d) depowering the first channel driving the first load based on one of the de-energize signal generated in step (c) and the channel deselect generated in step (b).

5,008,562

APPARATUS FOR GENERATING PULSE-LIKE CONSTANT CURRENT HAVING VARIABLE PULSE WIDTH

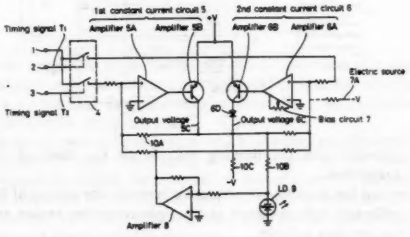
Takuya Hosoda; Mitsuhiro Morishita, and Takashi Tamura, all of Tokyo, Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1989, Ser. No. 388,200

Claims priority, application Japan, Aug. 31, 1988, 63-218191

Int. Cl.[5] H03K *5/04, 5/05*

U.S. Cl. 307—265 **4 Claims**



1. An Apparatus for generating a pulse-like constant current with a variable pulse width, comprising:

a first constant current circuit constituted by a high-speed amplifier;

a second constant current circuit constituted by a low-speed amplifier and connected in parallel with said first constant current circuit;

each of said first and second constant current circuits providing an output current and an output voltage;

a bias circuit for setting the output voltage of said second constant current circuit higher than the output voltage of said first constant current circuit;

first switching means for turning on and off said first constant current circuit in response to a first timing signal;

second switching means for turning on and off said second constant circuit in response to a second timing signal;

first and second timing signal generating means for generating said first timing signal and said second timing signal, respectively, in such a manner that said first timing signal and said second timing signal are simultaneously turned on while said second timing signal is turned off after said first timing signal is turned off;

said first and second timing signal generator means including means for changing the on/off durations of the first and second timing signals so as to change the widths of the output current pulses.

5,008,563

ADJUSTABLE CLOCK GENERATOR CIRCUIT

Timothy J. Kenney, Pittsford, and Lionel J. D'Luna, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 5, 1989, Ser. No. 402,585

Int. Cl.[5] H03K *3/284, 5/13, 3/017*

U.S. Cl. 307—269 **4 Claims**

1. An adjustable clock generator circuit comprising:

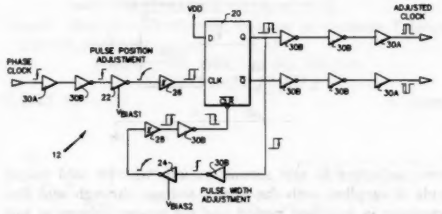
flip-flop means having a clock input, a clear input, and complementary outputs comprising:

first adjustable rise time inverter means having a first input for receiving a phasing input signal, a second input for receiving a first bias voltage for controlling the rise time

of its output signal, and an output for providing a first output signal;

first trigger means having an input connected to the output of said first adjustable rise time inverter and an output connected to the clock input of said flip-flop means and responsive to said first output signal for providing a pulse transition when said first output signal reaches a trigger voltage;

second adjustable rise time inverter means having a first input connected to one output of said flip-flop means and a second input connected to a second bias voltage and an



output for providing a second output signal having a rise time controlled by the second bias voltage;

second trigger means having an input connected to the output of said second adjustable rise time inverter means and an output connected to the clear input of said flip-flop means for providing a signal transition when said second output signal reaches a trigger voltage, thereby causing signals to appear on the complementary outputs of said flip-flop means with said signals having a pulse position controlled by the level of said first bias voltage and a width controlled by the level of said second bias voltage.

5,008,564

METHOD AND DEVICE FOR CONVERTING VOLTAGE TO FREQUENCY

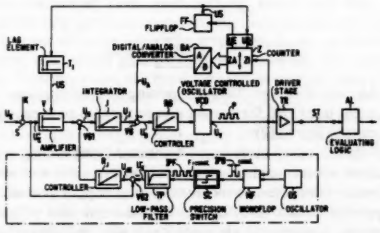
Hagen Hartwig, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Mar. 16, 1990, Ser. No. 494,600

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1989, 3908848

Int. Cl.[5] H03L *7/00;* **H03M** *1/60*

U.S. Cl. 307—271 **6 Claims**



1. A method of converting voltage to frequency comprising:

(a) increasing an input voltage having an arbitrary value with respect to time, into the positive range by adding a constant voltage;

(b) integrating the raised input voltage;

(c) comparing said integrated raised input voltage with a reference voltage which varies in constant voltage steps;

(d) acting upon a voltage controlled oscillator which generates a sequence of pulses which are proportional to the output voltage of a controlling element, with the voltage differential between the integrated voltage and the reference voltage via the controlling element;

(e) increasing the reference voltage by one constant voltage step with each pulse so that the voltage differential approaches zero;

(f) repeating steps (a) to (e) until reaching a specified upper limiting value;

(g) upon reaching said limiting value, reversing the integration of the raised input voltage and lowering the reference voltage by one constant voltage step;

(h) repeating steps a) to e) until reaching a specified lower limiting value;

(i) and upon reaching said limiting value, reversing the integration of the raised input voltage, increasing the reference voltage by one constant voltage step;

counting the pulses generated by the voltage controlled oscillator within a predetermined time interval.

5,008,565

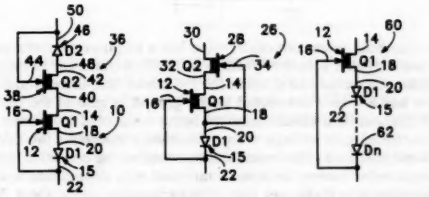
HIGH-IMPEDANCE FET CIRCUIT

Stewart S. Taylor, Beaverton, Oreg., assignor to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Jan. 23, 1990, Ser. No. 468,507

Int. Cl.[5] H03K *3/01, 3/353;* **G06G** *7/10*

U.S. Cl. 307—296.7 **31 Claims**



1. A high impedance integrated circuit element comprising:

an n-channel FET having a gate, a first side and a second side;

a diode having an anode and a cathode, said anode being electrically connected to said first side and said cathode being electrically connected to said gate, said diode biasing said FET to reduce FET conduction when said second side is at a positive potential relative to said diode cathode; and

a second FET having a gate, a first side and a second side and wherein the gate of said second FET is electrically connected to said anode and the first side of said second FET is electrically connected to the second side of said first FET.

5,008,566

POWER SUPPLY VOLTAGE DROP DETECTION CIRCUIT FOR USE IN EEPROM MEMORY

Kiyokazu Hashimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 30, 1989, Ser. No. 444,505

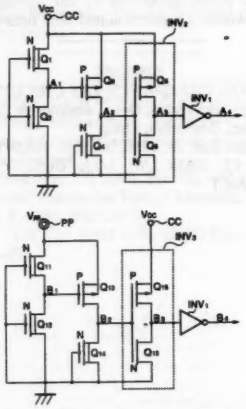
Claims priority, application Japan, Nov. 30, 1988, 63-303610

Int. Cl.[5] H03K *5/153, 3/01*

U.S. Cl. 307—296.8 **4 Claims**

1. A power supply voltage drop detection circuit comprising a first N-channel field-effect-transistor of a depletion type

having a drain connected to a power supply voltage line and a gate connected to ground, said first N-channel field-effect-transistor having a threshold whose absolute value has a positive temperature characteristic, a second N-channel field-effect-transistor having a drain connected to a source of the first N-channel field-effect-transistor and a source connected to the ground, a gate of the second N-channel field-effect-transistor being connected to receive a controlled gate voltage which ceaselessly maintains the second N-channel field-effect-transistor in a conducting condition, a P-channel field-effect-transistor of an enhancement type having a source connected to the power supply voltage line and a gate connected to a connection node between the first and second N-channel field-effect-transistors, said P-channel field-effect-transistor having



a threshold whose absolute value has a negative temperature characteristic, a third N-channel field-effect-transistor having a drain connected to a drain of the P-channel field-effect-transistor and a source connected to the ground, a gate of the third N-channel field-effect-transistor being connected to receive a controlled gate voltage whose ceaselessly maintains the third N-channel field-effect-transistor in a conducting condition, and an inverter having an input connected to a connection node between the P-channel field-effect-transistor and a third N-channel field-effect-transistor and having an output generating a signal which is a function of the sum of the absolute value of the threshold of the first N-channel field-effect-transistor and the absolute value of the threshold of the P-channel field-effect-transistor and indicative of a power supply voltage drop.

5,008,567

SIGNAL GENERATING CIRCUIT FREE FROM MALFUNCTION BASED ON NOISE

Kazuo Shibata, and Toshio Komuro, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

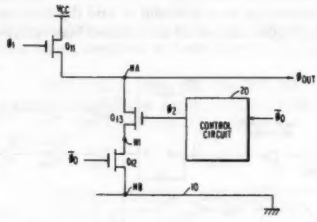
Filed Apr. 24, 1989, Ser. No. 342,066

Claims priority, application Japan, Apr. 25, 1988, 63-101809

Int. Cl.[5] H03K *17/16, 19/003, 19/017*

U.S. Cl. 307—443 **4 Claims**

1. A signal generating circuit comprising a first field effect transistor having a source-drain path connected between a first node and an output node, second and third field effect transistors having their source-drain paths connected in series between said output node and a second node, means for supplying said first node with a power voltage, means for supplying said second node with a reference voltage, means for supplying a gate of said first transistor with a first signal which assumes an active level to render said first transistor conductive in a first period and an inactive level to render said first transistor non-conductive in subsequent second and third periods following said first period, means for supplying a gate of said third transistor with a second signal which assumes an active level to render said third transistor conductive in said third period and an inactive level in said first and second periods, and means for supplying a gate of said second transistor with a third signal, different from said second signal, which assumes an active level to render said second transistor conductive in said third period and an inactive level to render said second transistor



non-conductive in said second period, wherein said output node is supplied with the power voltage through said first transistor in said first period and the power voltage at said output node is maintained in a dynamic manner throughout said second period and then discharged to the reference voltage through said second and third transistors in said third period.

5,008,568

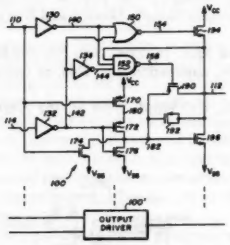
CMOS OUTPUT DRIVER

Wingyu Leung, Cupertino, and Chuen-Der Lien, Mountain View, both of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Continuation of Ser. No. 300,915, Jan. 24, 1989, abandoned. This application Aug. 8, 1990, Ser. No. 565,169

Int. Cl.[5] H03K *19/003*

U.S. Cl. 307—451 **6 Claims**



1. An output driver (**100**) comprising in combination:

an input line (**110**) for connection to receive an input signal;

an output line (**112**);

pull-down means including a transistor (**196**) having a gate, drain means connected to said output line, and source means connected to receive a power supply potential;

capacitor means (**192**) connected between said pull-down means transistor drain means and said pull-down means transistor gate;

first means (**170, 172, 174, and 176**) including at least an input connected to said input line and an output connected to said pull-down means transistor gate, said first means being responsive to at least the state of said input signal and operative to develop a signal of inverted state on said pull-down means transistor gate, said first means presenting a finite resistance to said pull-down means transistor gate;

feedback means including a transistor (**190**) having a gate,

source means connected to said pull-down means transistor gate, and drain means connected to said output line; and

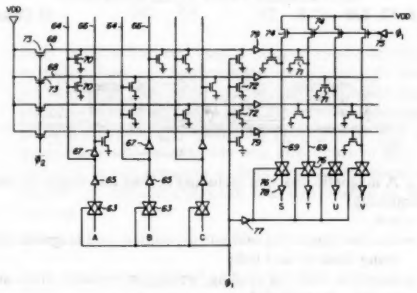
second means (**130**, **134**, **150**, and **152**) including an input connected to said input line and an output connected to said feedback means transistor gate, said second means being responsive to at least the state of said input signal and operative to develop a signal of similar state on said feedback means transistor gate.

5,008,569

HIGH-SPEED DYNAMIC CMOS CIRCUIT AND PRECHARGE GENERATOR

Marc P. Roy, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 11, 1989, Ser. No. 406,294
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 **8 Claims**



1. A two-plane logic array circuit adapted to be operated from a single clock pulse train and having an input plane and an output plane, the input plane being defined by an array of rows and input columns, the output plane being defined by an array of the rows and at least one output column, a series of first transistors being selectively positioned in the input plane at the intersection of the rows with the input columns such that a charge on one of the input columns results in the discharge of any charge on those rows sharing first transistors with that column, a series of second transistors being selectively positioned in the output plane at the intersection of the rows with the at least one output column such that a charge on one of the rows results in the discharge of any charge on any output column that shares second transistors with that row, the circuit further comprising first, second, third, fourth and fifth gate means, the first gate means controlling the transmission of each of a first set of input signals to a respective one of the input columns, the second gate means controlling the discharge of charge from the rows, the third gate means and the state of the input columns controlling the charging of each of the rows with a respective one of a second set of input signals, the fourth gate means controlling a pre-charging of the at least one output column, and the fifth gate means controlling the transmission of the state of the at least one output column to the output of the logic array circuit, the first, second and fourth gate means opening and closing simultaneously, the fifth gate means closing as the first gate means opens and opening as the first gate means closes, the logic array circuit further comprising a sub-circuit for deriving a third gate means pulse train from the single clock pulse train for controlling the opening and closing of the third gate means;

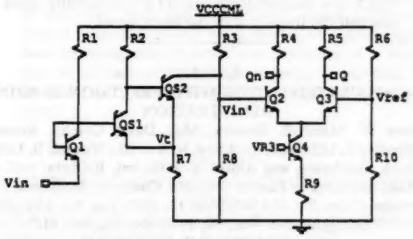
whereby during a first time period the first, second and fourth gate means are opened and then closed, and the fifth gate means is closed then opened, each of the first set of input signals being thereby transmitted to a respective one of the input columns, any charge on the first rows being discharged, and the at least one output column being pre-charged, the third gate means remaining closed during the first time period, and whereby during a second time period the third gate means is opened and then closed, the first, second and fourth gate means remaining closed and the fifth gate means remaining open during the second time period, the state of each row being thereby determined by the state of the respective second input signal and the state of the input columns, the state of the at least one output column then being determined by the resultant state of the rows, and the resultant state of the at least one output column then being transferred to the output of the logic array circuit, and whereby the aggregate length of the first and second time periods is equal to the period of the single clock pulse train.

5,008,570

SCHMITT-TRIGGERED TTL TO CML INPUT BUFFER APPARATUS

John D. Coddington, Plymouth, Minn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 30, 1990, Ser. No. 502,397
Int. Cl.[5] H03K *17/16, 3/354*
U.S. Cl. 307—475 **6 Claims**



1. An input buffer apparatus comprising in combination:

a CML gate having a first and second input, said first input receiving a voltage reference signal, said CML gate providing a first and second output signal, which are respectively complementary, and,

a hysteresis means operatively connected to said first input of said CML gate, said hysteresis means receiving a logic signal at its input, when said logic signal is low, said hysteresis means applies a trigger signal to said second input of said CML gate which is lower than said voltage reference signal and thus causes said first output signal to become a logical zero, when said logic signal is high, said hysteresis means applies a trigger signal to said second input of said CML gate which is higher than said voltage reference signal and thus causes said first signal to become a logical one, said hysteresis means comprises a Schmitt trigger.

5,008,571

METHOD AND APPARATUS FOR DIVIDING HIGH FREQUENCY ANALOG SIGNALS

Ronald M. Rudish, Commack, N.Y., assignor to AIL Systems, Inc., Deer Part, N.Y.

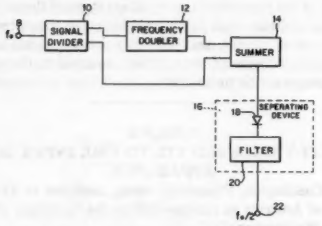
Filed Jun. 29, 1989, Ser. No. 373,894
Int. Cl.[5] G06G *7/00;* **H03B** *19/00*
U.S. Cl. 307—529 **6 Claims**

1. A frequency divider, which comprises:

means responsive to a time varying input signal for dividing the input signal into at least first and second signals, the signal dividing means including outputs from which the first and second signals are provided;

means responsive to the first signal for doubling the frequency of the first signal, the frequency doubling means providing a third signal as an output signal having a frequency which is substantially twice the frequency of the first signal;

means responsive to the second and third signals for summing the second and third signals, the summing means providing a fourth signal as an output signal which corresponds to the sum of the second and third signals, the fourth signal having a low frequency component which is substantially equal to one-half the frequency of the input signal, and a high frequency component; and



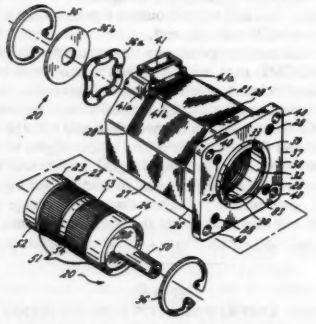
means for separating the low frequency component of the fourth signal from the high frequency component, the separating means providing an output signal corresponding to the low frequency component of the fourth signal, which low frequency component is substantially equal to one-half the frequency of the input signal.

5,008,572

ENCAPSULATED MOTOR WITH PRECISION BEARING REGISTRATION

James W. Marshall, Towson, Md.; David Gotchy, Roscoe; Bradley L. Uffelman, Rockford, both of Ill.; Wendell B. Leimbach, Baltimore, and Albert A. Wilhelmi, Baldwin, both of Md., assignors to Pacific Scientific Company, Rockford, Ill.

Division of Ser. No. 323,507, Mar. 13, 1989, Pat. No. 4,922,604.
This application Mar. 30, 1990, Ser. No. 491,814
Int. Cl.[5] H02K *5/15;* **F16C** *35/00*
U.S. Cl. 310—45 **10 Claims**



1. An encapsulated stator electrical motor comprising, in combination:

a rotor assembly having a plurality of rotor laminations fixed in a stack on a rotor shaft, rotor bearings on the rotor shaft at either end of the rotor lamination stack, the outer diameter of the bearings being slightly greater than the outer diameter of the rotor lamination stack;

a unitary potted stator assembly including a stator lamination stack with exterior exposed and stator end caps on either end of the stator lamination stack;

a continuous bore formed in the stator assembly through a first one of the end caps, through the stator lamination stack and through a second one of the stator end caps, the bore forming an internal cylindrical area for receipt of the rotor lamination stack and bearing surfaces in the end caps, the bore comprising a smoothly machined surface free of discontinuities capable of trapping machining debris formed during machining of the bore, the smoothly machined surface of the bore exposing portions of the end caps, the stator lamination stack and interposed potting material; and

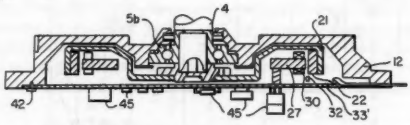
the rotor assembly being carried within the bore formed in the stator assembly with the rotor bearings engaging the bearing surfaces in the end caps leaving an air gap between the rotor lamination stack and the stator lamination stack.

5,008,573

MAGNETIC DISK ENCLOSURE WITH DETACHABLE STATOR

Osamu Beppu, Odawara; Toshihiro Moribe, Chigasaki; Youjiro Tezuka, Hiratuka, and Akira Chuma, Ashigarakami, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 21, 1990, Ser. No. 482,807
Claims priority, application Japan, Feb. 22, 1989, 1-40231
Int. Cl.[5] H02K *29/00, 21/22;* **G11B** *33/00*
U.S. Cl. 310—67 R **15 Claims**



1. A magnetic disk unit including at least one magnetic disk, comprising:

a hub;

means for supporting said hub in rotation, said magnetic disk being fixed to said hub;

a magnetic head for reading/writing information from and to said magnetic disk;

an actuator for positioning said magnetic head in predetermined positions on said magnetic disk;

enclosure means having an interior portion for storing said magnetic disk, said magnetic head and said actuator;

said means for supporting said hub in rotation including a shaft extending through said hub having bearings at its opposite ends for supporting said shaft in rotation with respect to said enclosure means;

a motor for rotating said hub including said motor having a rotor concentrically mounted to said shaft having a rotor housing in the shape of a cup with an opening facing away from the interior portion of said enclosure;

said rotor housing having a magnet fixed to the rotor housing and facing inwardly thereof;

a stator mounted concentrically inwardly of said rotor, and facing said rotor magnet;

one end of said shaft extending outside of said enclosure means and said rotor housing being fixed to said one end so that said rotor is positioned outside of said enclosure means; and

a supporting member for supporting said stator and being fixed to said enclosure means adjacent said rotor such that said one end of said shaft and said supporting member are not in contact with one another.

5,008,574

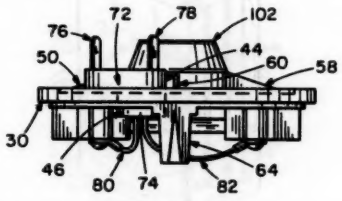
DIRECT CURRENT MOTOR ASSEMBLY WITH RECTIFIER MODULE

Roy S. Kitahata, Fullerton, Calif., assignor to The Chamberlain Group, Elmhurst, Ill.

Filed Apr. 4, 1990, Ser. No. 504,640
Int. Cl.[5] H02K *5/10, 11/00;* **H01R** *13/59*
U.S. Cl. 310—68 D **8 Claims**

1. A direct current motor assembly for connection to an alternating current power supply and adapted to drive an appliance, said assembly comprising:

a tubular housing;
an armature having windings and disposed inside said housing;
a first end closure closing one end of said housing; and
a second end closure closing the other end of said housing, said first end closure comprising an end plate having an aperture, said first end closure further comprising a rectifier assembly including a body portion with a first end and a second end, a pair of input terminals extending from said

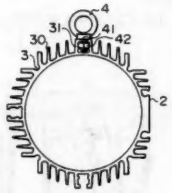


body portion first end, and a pair of output terminals extending from said body portion second end, said body portion being retained in said aperture with said input terminals being disposed in their entirety outside of said housing and said output terminals positioned in their entirety inside said housing whereby direct current may be provided to said armature without any discrete electrical conductors extending through said end closure or said housing.

5,008,575
LIFTING STRUCTURE FOR DYNAMIC ELECTRIC MACHINE

Noriyuki Ishimoto, Aichi, and Hirofumi Iida, Obu, both of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Apr. 30, 1990, Ser. No. 516,994
Int. Cl.[5] H02K *5/26*
U.S. Cl. 310—89 **1 Claim**

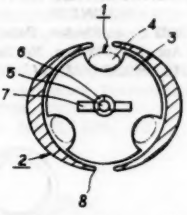


1. A lifting structure for lifting a dynamic electric machine having a substantially cylindrical stator frame provided on an outer peripheral surface thereof with a plurality of heat radiating ribs extending in a longitudinal direction of said machine, said lifting structure comprising:
grooves formed in opposing walls of two adjacent heat radiating ribs so as to extend in the longitudinal direction of said machine;
outer and inner ridges radially provided on each said opposing wall to define therebetween each said groove; and
a lifting member provided at a lower portion with a sliding engaging portion having an expanded portion which is slidably received in said grooves.

5,008,576
MAGNETIZING TYPE INDUCTION MOTOR

Jong-Seob Lee, InChon, Rep. of Korea, assignor to Jong-Sub Lee and Woo-Jin Kim, both of Seoul, Rep. of Korea

Filed Mar. 15, 1989, Ser. No. 324,217
Claims priority, application Rep. of Korea, Mar. 16, 1988, 2769/1988
Int. Cl.[5] H02K *17/12, 1/12*
U.S. Cl. 310—166 **11 Claims**

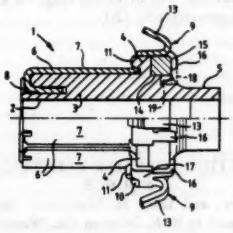


1. A magnetizing type induction motor having a coil-wound rotor and a commutator installed on a shaft comprising:
at least two stator pieces positioned about an exterior surface of the rotor, each said stator piece having a crescent-shaped cross section and being formed of a non-magnetized ferromagnetic material, the thickness of a center portion of each said stator piece being larger than the thickness of opposite longitudinal edges of said stator piece.

5,008,577
ASSEMBLED COMMUTATOR WITH HEAT-RESISTING RING

Patrick S. Wang, Repulse Bay, Hong Kong, assignor to Johnson Electric S.A., La Chaux de Fonds, Switzerland

Filed Oct. 10, 1989, Ser. No. 418,021
Claims priority, application United Kingdom, Oct. 13, 1988, 8823991; Oct. 13, 1988, 8823992
Int. Cl.[5] H02K *13/04;* **H01R** *39/16, 39/32*
U.S. Cl. 310—233 **4 Claims**



1. An assembled commutator comprising a cylindrical thermoplastic base having a first end and a second end, recesses formed in the first end, the base being formed with an integral outwardly projecting peripheral collar surrounding the base adjacent the second end, the base further having a supporting part extending between the first end and the collar, and the collar being formed with an annular shelf facing the second end of the base; an annular ring of high temperature non-softening material positioned on the shelf, the collar and the ring having adjacent peripheral surfaces; and a plurality of elongate commutator segments mounted on and around the base against the supporting part, each segment having a first finger at one end of the segment which fits into a respective one of the recesses and a tang and a second finger at an opposite end of the segment, the tang fitting over the peripheral surfaces of the collar and the ring, and the second finger extending over and

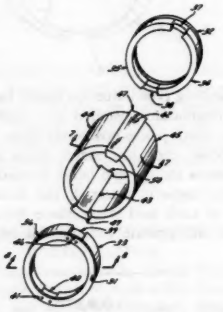
against a rear surface of the ring which faces the second end of the base to hold the ring in position and prevent axial movement of the segment along the base towards the second end.

5,008,578

PERMANENT MAGNET MOTOR HAVING DIVERTING MAGNETS

Sang H. L. Pace, 3802 Green Shadow, Pasadena, Tex. 77503

Filed Apr. 26, 1989, Ser. No. 343,923
Int. Cl.[5] H02K *1/12, 1/17, 21/26*
U.S. Cl. 310—256 **3 Claims**



1. In a dc electric motor having a rotor and a stator, and at least a pair of oppositely disposed main magnets associated with one of the rotor and stator, the improvement comprising:

an end diverting magnet positioned at each end of each main magnet, said end diverting magnets having a magnetic field perpendicular to the magnetic field of the main magnets, the magnet orientation of said end diverting magnets being positioned to increase the flux density of the main magnets with low magnetic leakage, wherein the main magnets and said end diverting magnets are arcuate segments of approximately 120°.

5,008,579

LIGHT EMITTING POLYMER ELECTRICAL ENERGY SOURCE

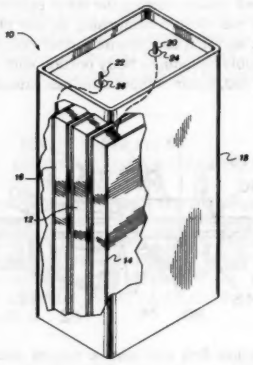
Jerry J. Conley, and Gary B. Mortensen, both of Waseca, Minn., assignors to E. F. Johnson Co., Waseca, Minn.

Filed Mar. 3, 1989, Ser. No. 318,743
Int. Cl.[5] G21H *1/12*
U.S. Cl. 310—303 **43 Claims**

1. An electrical energy source, comprising:

a light emitting polymer material having at least one light emitting surface emitting light energy in a specified frequency bandwidth, the light emitting polymer material comprising an organic polymer incorporating a radioisotope emitting beta particles to which an organic phosphor is bonded, wherein the radioisotope consists of a radioisotope selected from the group ^{3}H, ^{10}Be, ^{14}C, ^{32}Si and ^{32}P; and

a photovoltaic cell having a light collecting surface and a pair of electrical contacts, the light collecting surface of the photovoltaic cell being substantially intimately optically coupled to the light emitting surface of the light emitting polymer, such that an open-circuit voltage is generated between the pair of electrical contacts as a



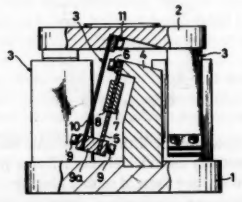
result of the photovoltaic cell's absorption of light energy emitted from the light emitting polymer.

5,008,580

PIEZOELECTRIC VIBRATION GENERATOR AND VIBRATORY PARTS FEEDER INCORPORATING THE SAME

Takeshi Masuda, Kurobe; Susumu Yagi, Toyama; Sakiichi Okabe, Ishikawa; Yoichi Kamishima, and Kazuo Kawagoe, both of Toyama, all of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Feb. 3, 1989, Ser. No. 305,919
Claims priority, application Japan, Feb. 3, 1988, 63-23299; Oct. 4, 1988, 63-250284
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—321 **52 Claims**



1. A piezoelectric vibration generator comprising:

(a) at least two resilient plate members joined together at their one ends, which are free-standing and disposed in a U-shaped configuration substantially folded about the joint therebetween, their opposite ends being directly upwardly and separately secured to supports; and

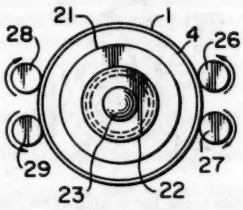
(b) a pair of piezoelectric elements attached respectively to front and back surfaces of one of said resilient plate members.

5,008,581

PIEZOELECTRIC REVOLVING RESONATOR AND SINGLE-PHASE ULTRASONIC MOTOR

Akio Kumada, Kokubunji; Takahiko Iochi, Koganei, and Minoru Okada, Kunitachi, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka and Demix Technology Inc., Tokyo, both of, Japan

Filed Apr. 10, 1989, Ser. No. 335,374
Claims priority, application Japan, Apr. 12, 1988, 63-88160
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 6 Claims



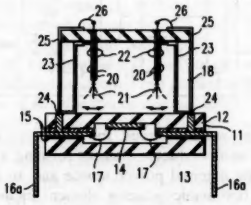
1. A piezoelectric revolving resonator comprising a piezoelectric ceramic element in the form of a disk, a cylinder or a pipe having only two areas of opposite polarization, said two areas being formed by dividing said disk, cylinder or pipe by its diameter, said piezoelectric ceramic element including a single electrode on each of opposite main surfaces thereof to form equipotential surfaces on said opposite main surfaces, such that a resonant condition, in which a center of mass of said piezoelectric element is revolved due to piezoelectric deformations thereof, can be excited by a single-phase alternating current voltage applied across said two single electrodes on said opposite main surfaces of said piezoelectric ceramic element.

5,008,582

ELECTRONIC DEVICE HAVING A COOLING ELEMENT

Chiaki Tanuma, Tokyo; Kazuhiro Itsumi, Kawasaki; Nobuo Iwase, Kamakura: Tomio Ono; Yuu Kondo, both of Yokohama, and Kazutaka Saito, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 150,294, Jan. 29, 1988, abandoned. This application Apr. 26, 1990, Ser. No. 515,668
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—332 4 Claims



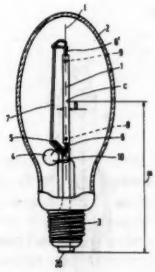
1. An electronic device, comprising:
an insulating base member;
a semiconductor integrated circuit chip having electrodes thereon and being mounted on said base member;
an insulating cap member being provided on said base member and sealing said chip therebetween;
a lead frame member having plural leads and extending outside of said base and cap members;
wire connection members connected between said electrodes of said chip and said lead of said frame;
a supporting member provided directly on said base member,
piezoelectric cooling means provided on said supporting member for cooling said chip, including bimorph vibrator means and plural electric terminals connected to said bimorph vibrator means;
plural through holes being provided through said base member; and
plural electric connecting members connecting said electric terminals of said cooling means to said leads of said lead frame through said through holes provided through said base member.

5,008,583

HIGH-PRESSURE DISCHARGE LAMP

Samuel A. Carleton, Bath, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 12, 1989, Ser. No. 378,879
Claims priority, application Netherlands, Jul. 12, 1988, 8801756; Aug. 17, 1988, 8802034
Int. Cl.[5] H01J *1/02*
U.S. Cl. 313—25 5 Claims



3. A high pressure sodium discharge lamp, comprising:
a clear outer envelope defining a lamp axis and having a reentrant stem sealing said envelope in a gas-tight manner;
an elongate discharge vessel disposed within said outer envelope in which a discharge is maintained during lamp operation, said discharge vessel having a longitudinal axis aligned with said lamp axis, an outside diameter D_v a first end proximate said stem and a second end remote from said stem;
first and second rigid current conductors extending from said stem into said envelope for supporting and energizing said discharge vessel, said first current conductor being connected to said first end of said discharge vessel and said second current conductor extending the length of said discharge vessel and being connected to said second end of said discharge vessel;
a starting circuit comprising a glow starter for initiating a discharge within said discharge vessel, said glow starter being mounted adjacent said stem and spaced a distance of at least D/2 from said longitudinal axis of said discharge vessel; and
shielding means for shielding a substantial portion of said glow starter from heat radiation.

5,008,584

SPARK PLUG HAVING A BUILT-IN RESISTOR FOR SUPPRESSING NOISE SIGNALS

Morihiro Atsumi, Okazaki, and Kiyoaki Tanaka, Obu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 6, 1989, Ser. No. 375,978
Claims priority, application Japan, Jul. 6, 1988, 63-168533
Int. Cl.[5] H01T *13/05*
U.S. Cl. 313—136 23 Claims

2. A spark plug comprising an insulator having a bore therein along an axis direction, a terminal electrode inserted from one opening of the bore of the insulator and fixed in the bore, a center electrode inserted from another opening of the

bore of the insulator and fixed in the bore, a resister placed between the terminal electrode and the center electrode in the bore of the insulator, and conducting glass seals placed between one end of the resister and the terminal electrode and between another end of the resistor and the center electrode,

said resistor being a sintered body made from a mixture of glass powders, electrical insulating ceramic powders and a carbon black powder in an amount of 0.1 to 2.5% by weight based on 100% by weight of a total of the glass powders and the ceramic powders,

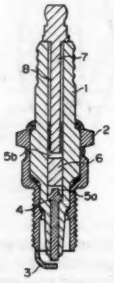
said glass powders comprising coarse glass particles of 177 μm to 840 μm in particle size and fine glass particles of 74 μm or less in particle size,

said ceramic powders comprising coarse ceramic particles of molten alumina of 177 μm to 840 μm in particle size and fine ceramic particles of 10 μm or less in particle size,

the amount of the glass powders in % by weight being in the range between the formulae (1) and (2):

$$65.7-7.5x+0.5x^2 \quad (1)$$

$$82.2-6.1x+0.4x^2 \quad (2)$$



wherein x is the density in g/cm^3 of fine ceramic particles having a particle size of 10 μm or less,

the proportion of the coarse glass particles in the glass powders in weight ratio being in the range between the formulae (3) and (4):

$$0.53+0.03x-0.0006x^2 \quad (3)$$

$$0.72+0.06x-0.0030x^2 \quad (4)$$

wherein x is as defined above,

the proportion of the coarse ceramic particles of molten alumina in the ceramic powders in weight ratio being in the range between the formulae (5) and (6):

$$0.93-0.20x+0.016x^2 \quad (5)$$

$$1.06-0.10x+0.006x^2 \quad (6)$$

wherein x is as defined above.

5,008,585

VACUUM ARC SOURCES OF IONS

Henri Bernardet, Saint Michel sur Orge, and Jean-Claude Pauwels, Brunoy, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 21, 1988, Ser. No. 223,465

Claims priority, application France, Jul. 22, 1987, 87 10391

Int. Cl.[5] H01J *27/00, 27/26*

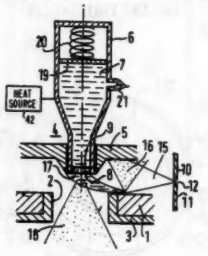
U.S. Cl. 313—231.31 **14 Claims**

1. Vacuum arc ion comprising

a cathode and an anode having a surface,

means for providing a layer of liquid metal over said anode surface, said means including a reservoir of said liquid metal,

a connection member disposed between said reservoir and said anode surface, and being permeable to said liquid metal, said connection member being a material having numerous pores to pass by capillary action said liquid metal from said reservoir to said anode surface;



trigger electrode means for forming a first plasma from said cathode to said anode surface, said anode surface being heated by said first plasma to form an emitted vapor of said liquid metal, and

means for ionizing said emitted vapor to form a second plasma of arc ions from said anode surface and extending past said cathode.

5,008,586

SOLID STATE CURRENT SENSING CIRCUIT AND PROTECTION CIRCUIT

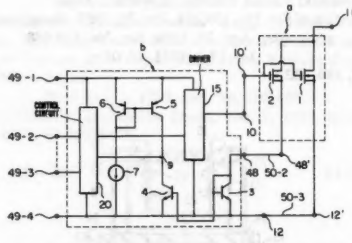
Hideki Miyazaki; Akihiko Kanouda; Kenichi Onda, and Yasuo Matsuda, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 27, 1989, Ser. No. 302,340

Claims priority, application Japan, Jan. 29, 1988, 63-16971

Int. Cl.[5] G05F *1/56, 3/26*

U.S. Cl. 323—315 **7 Claims**



1. A current sensing circuit for a semiconductor circuit having a first semiconductor element forming a series circuit including a first external power source and an external load, wherein said first semiconductor element includes means to control a flow and cut-off of a load current through said external load, and a second semiconductor element having a smaller size than the first semiconductor element and allowing a second current to flow which is smaller than the load current and which varies depending on the load current, said current sensing circuit comprising:

means for taking out a current which is connected to the second semiconductor element to take out the second current, said means including a first current mirror circuit having at least two transistors;

means including a second current mirror circuit having at least two transistors;

means for setting a reference current to allow a predeter-

mined reference current to flow in said second current mirror circuit;

current comparison means including a series circuit of one of said transistors of the first current mirror circuit and one of said transistors of the second mirror circuit, and an output terminal provided therebetween from which a state signal showing a result of the comparison between the second current and the reference current is outputted;

means for connecting said current comparison means to a second external power source having a lower voltage than said first external power source; and

current sensing means for sensing a value of the load current flowing in said first semiconductor based on the output of said current comparison means.

5,008,587

ELECTRIC LAMP WITH IMPROVED LAMP CAP ASSEMBLY

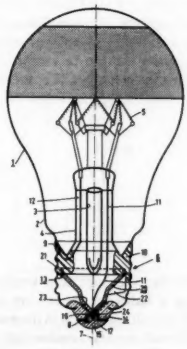
Livio Borgis, Torino, Italy, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 14, 1990, Ser. No. 567,413

Claims priority, application Netherlands, Aug. 28, 1989, 8902170

Int. Cl.[5] H01J *5/50*; H01K *1/46*

U.S. Cl. 313—318 **11 Claims**



1. An electric lamp comprising

a translucent lamp vessel (1) with an end portion (2) which comprises a sealed exhaust tube (3) and a stemtube (4),

a light source (5) inside the lamp vessel,

a lamp cap (6) having an axis (7) and contact members (8, 9), which cap is fastened to the end portion of the lamp vessel by means of an adhesive compound (10),

current supply conductors (11, 12) which extend from the light source to respective contact members (8, 9) at the lamp cap and are connected thereto,

the lamp cap (6) having a metal shell portion (13) and a base portion (14) of insulating material which carries at least one base contact member (8) provided with an opening (15) which issues into a channel (16) through the base portion, through which channel a current supply conductor (11) can pass to the exterior,

in the lamp cap, a hollow body (20) of synthetic material which extends from a first open end (21) near the lamp vessel (1) to the base portion (14) of the lamp cap (6) and insulates the current supply conductor (11) from the shell portion (13) of the lamp cap, characterized in that the body (20) of synthetic material has outward projections (22) which are distributed over its circumference and bear with clamping fit on the shell portion (13) of the lamp cap (6).

5,008,588

WEDGE-TYPE LAMP BULB ASSEMBLY

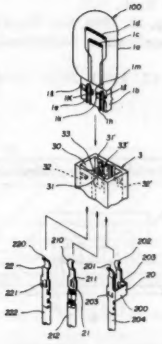
Toshiro Nakahara, Hiratsuka, Japan, assignor to Ichikoh Industries, Ltd., Tokyo, Japan

Filed Jun. 22, 1989, Ser. No. 369,233

Claims priority, application Japan, Jun. 22, 1988, 63-81675

Int. Cl.[5] H01K *1/46*; H01R *17/00*

U.S. Cl. 313—318 **3 Claims**



1. A wedge-type lamp bulb assembly having a wedge-type lamp bulb consisting of a bulb containing a filament and a wedge-shaped base extending from the bulb, a plurality of lead wires connected to the filament being led out of a part of the wedge-shaped base and folded along the surfaces of the wedge-shaped base, and a socket which removably holds the wedge-shaped base, wherein there is mounted inside said socket a plurality of terminals which are in resilient contact with said lead wires, respectively, and there is formed on either the inner wall of said socket or the surfaces of said base and in positions opposite to each other along the inserting/removing direction of said base at least a pair of protruding members which engages either the surfaces of said base or the inner wall of said socket.

5,008,589

ELECTRON GUN AND METHOD FOR MANUFACTURING THE SAME

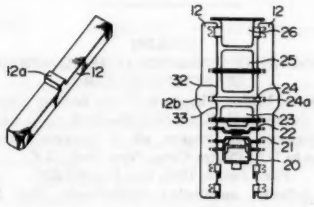
Hiroshi Takanobu, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 18, 1989, Ser. No. 451,805

Claims priority, application Japan, Dec. 26, 1988, 63-325832

Int. Cl.[5] H01J *29/48*

U.S. Cl. 313—456 **8 Claims**



1. A method for manufacturing an electron gun retaining a cathode and a plurality of electrodes with bead glasses, wherein each of said bead glasses are provided with a convex portion at a portion on its electrode side where at least one bead support for an electrode is buried, said bead glasses disposed on bead bases of a beading apparatus are heated and

softened, and bead supports for the cathode and the plurality of electrodes are buried and secured in the bead glasses.

5,008,590

DISPLAY ARRANGEMENT HAVING PIN DIODE SWITCHING ELEMENTS

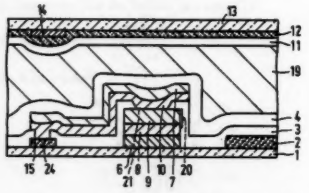
Frederikus R. J. Huisman; Gerrit Oversluizen, and Jan W. D. Martens, all of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed Sep. 25, 1989, Ser. No. 412,024

Claims priority, application Netherlands, Sep. 30, 1988, 8802409

Int. Cl.[5] H01L *29/06, 29/44*

U.S. Cl. 313—500 **8 Claims**



1. A display arrangement comprising an electro-optical display medium between two supporting plates, a system of picture elements arranged in rows and columns, each picture element comprising two picture electrodes provided on the surface of the supporting plates facing each other, a system of row and column electrodes for driving the picture elements, the row electrodes being provided on one supporting plate and the column electrodes being provided on the other supporting plate, and a system of switching elements, a switching element being included between at least one row electrode and one column electrode in series with each picture element, which switching element comprises at least one PIN diode having a mesa-shaped semiconductor body, which comprises in a sectional view transverse to a supporting plate in order of succession at least a first semi-conductor region of a first conductivity type having a comparatively high doping concentration, a second semiconductor region of one of the first and a second conductivity type having a comparatively low doping concentration, and a third semiconductor region of the second conductivity type having a comparatively high doping concentration, the first and third semiconductor regions being provided with a connection conductor, characterized in that a region within which the second semiconductor region and the third semiconductor region adjoin each other is located, viewed in projection, inset within the edge of the second semiconductor region.

5,008,591

X-RAY IMAGE INTENSIFIER TUBE COMPRISING A SELECTIVE FILTER

Johnny van der Velden; Theodorus F. van Bergen; August L. H. Simons; Johannes K. E. Colditz; Martinus A. C. Ligtenberg, and Franciscus M. Dreesen, all of Heerlen, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

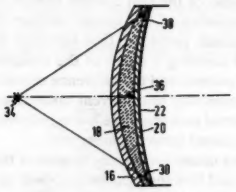
Filed Jan. 8, 1990, Ser. No. 461,885

Claims priority, application Netherlands, Jan. 9, 1989, 8900040

Int. Cl.[5] H01J *40/18;* **G01N** *21/64*

U.S. Cl. 313—524 **11 Claims**

1. An X-ray image intesifier tube, comprising an entrance screen, an exit screen and electron-optical means for projecting photo-electrons from the entrance screen onto the exit screen, the entrance screen successively comprising a luminescent layer, an intermediate layer and a photocathode, characterized in that the intermediate layer exhibits a selective absorption for



photon energy, so that comparitively high-energetic photons are absorbed more than comparatively low-energetic photons.

5,008,592

HALOGEN INCANDESCENT LAMP AND METHOD OF MANUFACTURING A HALOGEN INCANDESCENT LAMP

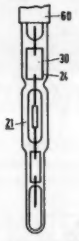
Henrikus J. H. Pragt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 23, 1989, Ser. No. 425,894

Claims priority, application Netherlands, Nov. 15, 1988, 8802803

Int. Cl.[5] H01J *9/26;* **H01K** *3/20, 1/38*

U.S. Cl. 313—623 **5 Claims**



1. An incandescent lamp comprising a sealed, tubular, tiples envelope containing a halogen containing gas and having a central longitudinal axis along which is disposed a filament and first and second current supply conductors connected to respective first and second ends of the filament, characterized in that:

a. the first current supply conductor includes an intermediate widened portion having a width which is smaller than a first internal diameter of an adjacent first portion of the envelope which exists before sealing of the envelope, but is larger than a second internal diameter of the envelope for stopping entry of the widened portion into the envelope and facilitating axial positioning of the filament before sealing of the envelope, and having a thickness which is substantially smaller than said second internal diameter;

b. the second current supply conductor includes an intermediate widened portion having a width which is smaller than both the second internal diameter and the internal diameter of an adjacent second portion of the envelope which exists before sealing of the envelope; and

c. the envelope is sealed around the widened portions of the first and second current supply conductors, with distal ends of said conductors projecting from respective ends of said envelope.

3. A method of manufacturing a halogen incandescent lamp comprising a tipless glass lamp vessel sealed in a vacuum-tight manner and having an axis, this lamp vessel having on each side a first and a second seal, respectively, in which

a filament having an axis is connected to a first and a second current supply conductor having a first and a second foil-shaped part, respectively, and an external part con-

nected thereto, which foil-shaped parts each have a width dimension transverse to the axis of the filament,

the filament is axially introduced into a glass tube having an axis through an open first end thereof, means being provided for holding the filament positioned in the axial direction of the tube,

the glass tube is heated at the area of the first foil-shaped part and a first seal is formed in the tube, in which the first foil-shaped part is accommodated;

the tube is filled with a halogen-containing gas,

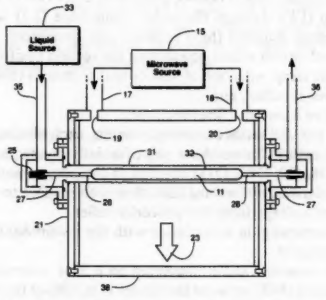
the tube is sealed in a vacuum-tight manner by heating the tube at the area of the second foil-shaped part and forming a second seal in the tube in the axial direction at a certain distance from the seal, the second foil-shaped part being accommodated in this second seal, characterized in that the width dimension of the second foil-shaped part is larger than the width dimension of the first foil-shaped part and the glass tube has a constriction which allows the first current supply conductor and the filament to pass and stops the second foil-shaped part.

5,008,593

COAXIAL LIQUID COOLING OF HIGH POWER MICROWAVE EXCITED PLASMA UV LAMPS

LaVerne A. Schlie, and Robert D. Rathge, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 13, 1990, Ser. No. 553,929
Int. Cl.[5] H01J *7/46*
U.S. Cl. 315—39 **5 Claims**



1. In a high power microwave excited plasma system comprising:

(a) a source of microwave energy;

(b) a plasma tube operatively coupled to said source of microwave energy for generation of a plasma within said plasma tube in response to energy input thereinto from said source of microwave energy;

(c) a gaseous medium within said plasma tube for supporting a plasma therein;

(d) reflector means for focusing radiation emitted from said plasma tube; and

(e) means for cooling said plasma tube;

an improvement wherein said means for cooling said plasma tube comprises,

(f) a jacket surrounding said plasma tube and defining a passageway around said plasma tube within said jacket;

(g) a source of liquid dimethyl polysiloxane; and

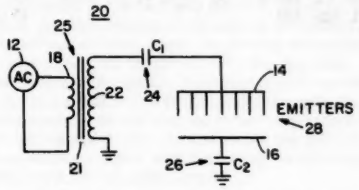
(h) means for circulating said liquid dimethyl polysiloxane through said passageway in heat exchange relationship with said plasma tube for cooling said plasma tube.

5,008,594

SELF-BALANCING CIRCUIT FOR CONVECTION AIR IONIZERS

Ralph W. Swanson, Brunswick; Daniel F. Gagnon, Westbrook, and Donald G. Parent, Windham, all of Me., assignors to Chapman Corporation, Portland, Me.

Filed Feb. 16, 1989, Ser. No. 311,711
Int. Cl.[5] H05F *3/06*
U.S. Cl. 315—111.81 **10 Claims**



1. A self-balancing air ionizer circuit with inherently passively balanced ion emission comprising:

at least one ion emitter point;

ion collector means adjacent to and spaced from said at least one emitter point;

means for providing an air flow past said emitter point;

means for providing voltage potential between said at least one emitter point and said collector means; and

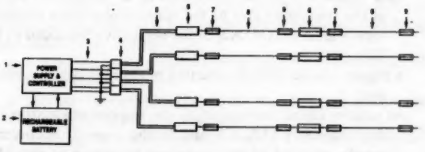
means for isolating said at least one emitter point and said collector means from external charge sources and sinks, for maintaining charge balance in the positive and the negative ions emitted from said at least one emitter and collected by said collector for producing a charge balanced ionized airstream wherein said means for isolating and maintaining charge balance includes at least one capacitor means in series with the collector means and ground.

5,008,595

ORNAMENTAL LIGHT DISPLAY APPARATUS

Dennis M. Kazar, Austin, Tex., assignor to Laser Link, Inc., Austin, Tex. and William K. Wells, Jr., Reston, Va.

Continuation of Ser. No. 871,035, Sep. 8, 1986, Pat. No. 4,870,325, Continuation of Ser. No. 810,304, Dec. 18, 1985. This application Feb. 23, 1989, Ser. No. 315,450
Int. Cl.[5] H04B *37/02*
U.S. Cl. 315—178 **32 Claims**



1. A light display comprising:

electrically conductive primary source connector, a ground connector and a secondary source connector constituting a first electrically conducting string, a number of LEDs, means for connecting the LEDs in parallel across the ground connector and one of the primary and secondary source connectors; and

at least one of said LEDs including a set of bicolor diodes and means for controlling the color of said set by oscillating the current between portions of the diodes at preselected rates; and

said means for controlling the color including oscillating current between portions of said bicolor diodes at such a rate to produce a color different than that of either color of said bicolor diodes.

5,008,596

FLUORESCENT LAMP HIGH FREQUENCY OPERATING CIRCUIT

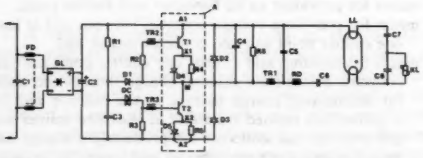
Roland Kastl, Unterhaching, and Ulrich Roll, Munich, both of Fed. Rep. of Germany, assignors to Patent Treuhand Gesellschaft fur elektrische Glühlampen m.b.H., Munich, Fed. Rep. of Germany

Filed Nov. 23, 1988, Ser. No. 276,223

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1987, 3740860; Oct. 14, 1988, 3835121

Int. Cl.[5] H05B *37/00, 39/04, 41/36;* H02M *7/5387*

U.S. Cl. 315—205 15 Claims



1. For combination with a low-pressure discharge lamp (LL),

an operating circuit for high-frequency operation of the lamp, said operating circuit comprising

a power network rectifier (GL) for providing d-c output electrical energy;

a self-excited half-bridge oscillating circuit comprising

an emitter current supply terminal (M; A2) for each of said transistors;

a toroidal core transformer (TR1, TR2, TR3),

said transistors being connected to the toroidal core transformer to form an inductively coupled oscillatory circuit and, in operation, causing said toroidal core transformer to operate in saturated condition;

base resistors (R2, R3) connected to the respective bases of the transistors and to the respective emitter current supply terminal (M, A2) of the respective transistor (T1, T2);

a trigger circuit (DC) for starting of the oscillating circuit; and

an emitter circuit connected to the respective emitters of the transistors (T1, T2) and to the respective current supply terminal of the respective transistor to provide current feedback therefor,

a circuit means generating enhanced ignition voltages for the lamp and to ensure reliable starting and subsequent stable continuous operation,

said circuit means consisting of a diode means (D6, D7) in the emitter circuits of each of said switching transistors,

said diode means being poled in current passing direction with respect to current flow through the emitter and connected between the emitter and the respective emitter current supply terminal of said at least one transistor to thereby enhance, during starting conditions of the lamp, resonance current flow through the oscillatory circuit including said toroidal core transformer operated in saturation level condition.

5,008,597

POWER NETWORK SUPPLIED HIGH-FREQUENCY LOW-PRESSURE DISCHARGE LAMP OPERATING CIRCUIT

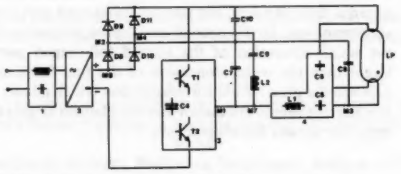
Anton Zuchtriegel, Taufkirchen, Fed. Rep. of Germany, assignor to Patent Treuhand Gesellschaft für elektrische Gluhlampen mbH, Munich, Fed. Rep. of Germany

Filed Nov. 22, 1989, Ser. No. 440,776

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1988, 3841227

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—209 R 11 Claims



1: Power network supplied high-frequency low pressure discharge lamp (LP) operating circuit having

a power rectifier (2) having output terminals (M8, M5);

a high-frequency oscillator circuit (3) including a push-pull transistor frequency generator having two alternately conducting transistors (T1, T2) connected to define a common junction (M1) between the transistors, a feedback circuit (RK1, RK2, RK3) coupled to the transistors, and a smoothing capacitor (C4) coupled across both transistors;

a series resonance circuit (4) having a series inductance (L1) and a series capacitor (C6) coupled to the lamp, to provide starting energy thereto;

a first circuit means connecting a first electrode (E1) of the lamp (LP) through the series inductance (L1) with said common junction (M1) between said transistors;

a second circuit means connecting the second electrode (E2) of the lamp with one of said output terminals (M8) of the power rectifier; and

an active harmonic filter including

two parallel series connected circuits, each of which series circuits is formed by a pair of serially connected diodes (D8, D9; D10, D11) coupled to the power rectifier and polarized in forward direction with respect to the output voltage from the power rectifier,

and comprising, in accordance with the invention, the combination of

a first capacitor (C7) connected to a first common diode junction (M2) between the diodes (D8, D9) of the first pair and to said common junction (M1) between said transistors;

a second capacitor (C8) connected also to the first common diode junction (M2) and to a junction (M3) between said inductance (L1) and the first electrode (E1) of the lamp (LP); and

a pumping inductance (L2) connected to a second common diode junction (M4) between the diodes (D10, D11) of the second diode pair, and further connected to said common junction (M1) between said transistors (T1, T2).

5,008,598

FLUORESCENT LIGHTING CONTROL CIRCUIT

James C. Cook, II, Marshall, Mich., assignor to Progressive Dynamics, Inc., Marshall, Mich.

Filed Jan. 5, 1990, Ser. No. 461,221

Int. Cl.[5] H05B *41/36*

U.S. Cl. 315—225 8 Claims

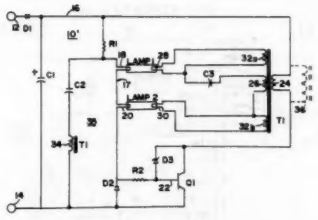
1. A control circuit for a gas discharge lamp, said lamp having a gas filled chamber and at least one pair of discharge

electrodes in said gas filled chamber, said control circuit comprising:

a transformer including a primary winding and a secondary winding;

a gated switch means having a gating terminal and selective conducting means responsive to a signal being applied to said gating terminal for applying a supply voltage to said primary winding;

control signal generating means for selectively applying a signal to said gating terminal when said control circuit is in a first state and for not applying a signal to said gating terminal when said control circuit is in a second state;



said secondary winding being adapted to attempting to establish a current between said discharge electrodes upon the occurrence of both a current not being conducted between said discharge electrodes and said control circuit being in said second state; and

protection means for applying a signal to said gating terminal upon the occurrence of both said control circuit being in said second state and failure of said secondary winding to establish a current between said discharge electrodes;

said secondary winding includes means for producing a high voltage in order to attempt to establish a current between said discharge electrodes and wherein said protection means includes means responsive to said high voltage exceeding a predetermined level.

5,008,599

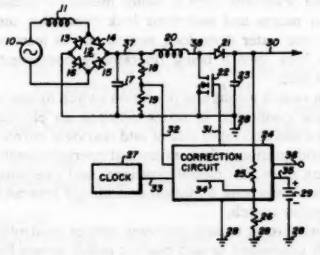
POWER FACTOR CORRECTION CIRCUIT

Richard C. Counts, Dallas, Tex., assignor to USI Lighting, Inc., San Leandro, Calif.

Filed Feb. 14, 1990, Ser. No. 479,650

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—247 **9 Claims**



1. A ballast circuit for producing on a circuit output a DC signal with a high voltage amplitude, the ballast circuit comprising:

a power source for providing an AC signal;

rectifying means, coupled to the power source, for rectifying the AC signal to produce a rectified AC signal;

voltage dividing means, coupled to the rectifying means, for dividing voltage of the rectified AC signal to produce a voltage divided signal;

capacitance means, coupled to the circuit output, for storing a charge;

inductance means, coupled to the rectifying means, for providing a current to charge the capacitance means;

diode means, coupled between the capacitance means and the inductance means, for allowing current to flow from the inductance means to the capacitance means to charge the capacitance means, and for not allowing current to flow from the capacitance means to the inductance means;

current gate means for draining current from the inductance means when the current gate means is turned on; and,

control circuitry, coupled to the current gate means and to the voltage dividing means, for turning the current gate means on and off, the control circuitry including

ramp generator means for generating a pulse modulation reference signal with a varying voltage amplitude, and

first comparator means, coupled to the ramp generator and to the voltage divider, for comparing the pulse modulation reference signal with the voltage divided signal to produce a first modulated signal.

5,008,600

DEFLECTION YOKE DEVICE

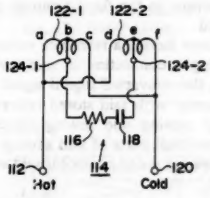
Akira Hashimoto, and Shunji Arai, both of Yokohama, Japan, assignors to Murata Mfg. Co., Ltd., Kyoto, Japan

Filed Aug. 13, 1990, Ser. No. 566,095

Claims priority, application Japan, Aug. 30, 1989, 1-101451[U]

Int. Cl.[5] H01J *29/56*

U.S. Cl. 315—370 **10 Claims**



1. A deflection yoke device including a first horizontal deflection coil wound into a saddle-type configuration and a second horizontal deflection coil wound into the saddle-type configuration and connected in parallel with said first horizontal deflection coil with one end of said second horizontal deflection coil connected thereto via a high voltage-side terminal and the other end of said second horizontal deflection coil connected thereto via a low voltage-side terminal, said deflection yoke device comprising:

a first intermediate terminal provided on said first horizontal deflection coil;

a second intermediate terminal provided on said second horizontal deflection coil; and

a damping circuit connected between said first intermediate terminal and said second intermediate terminal and adapted to eliminate electrical oscillations generated by said first and second horizontal deflection coils.

5,008,601

MULTIFUNCTION SWITCHING CONTROL SYSTEM

Takashi Nakamura; Haruhiko Tanaka; Touru Hyodo, and Yasuhiro Osanai, all of Tokyo, Japan, assignors to Janome Sewing Machine Company Limited, Tokyo, Japan

Filed Apr. 2, 1990, Ser. No. 503,324

Claims priority, application Japan, Mar. 31, 1989, 1-78056

Int. Cl.[5] H02P *7/00*; D05B *69/26*

U.S. Cl. 318—268 **5 Claims**

1. In a multifunction switching control system for a sewing machine, comprising:

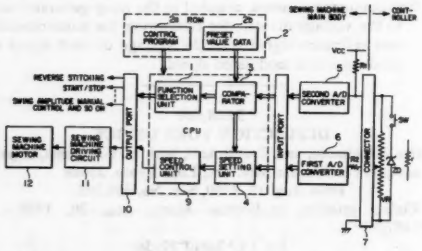
a sewing speed controller for controlling a sewing speed of a computerized sewing machine by setting a voltage value of a variable resistor incorporated in said sewing speed controller;

said variable resistor having a ground terminal, a variable terminal and a fixed terminal;

an invariable resistor;

a first A/D converter for converting the set voltage value of the variable resistor, at the variable terminal, from an analog signal to a digital signal; and

a second A/D converter for converting a voltage value, at the fixed terminal of the variable resistor, from an analog signal to a digital signal;



the improvement comprising:

(a) a switch circuit operated to connect one terminal of the variable resistor to the fixed terminal of said variable resistor; and

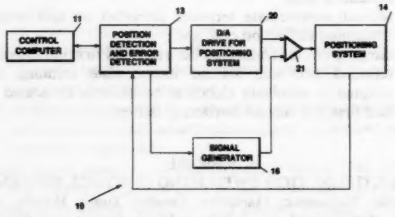
(b) a comparator having a reference value stored therein for detecting a connection of said switch circuit by comparing the converted digital signal of said second A/D converter with said stored reference value, said comparator causing said sewing speed controller to operate functional parts of said sewing machine other than said sewing speed control if said switch circuit is connected.

5,008,602

SIGNAL GENERATOR FOR USE IN INDUSTRIAL POSITIONING SYSTEMS

Eugene H. Stevens, Newbury Park, Calif., and Mark W. Utlaut, Scappoose, Oreg., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 19, 1989, Ser. No. 354,652
Int. Cl.[5] G05B *13/00*
U.S. Cl. 318—561 **9 Claims**



1. A signal generator comprising:

integrating means for integrating an input signal to provide an output signal;

limiting means, connected between the input and output of said integrating means for limiting the output thereof; and

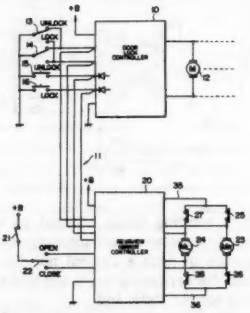
nulling means coupled to the output of said integrating means for nulling the output signal of said integrating means when the input to said integrating means drops below a first predetermined threshold.

5,008,603

ELECTRICALLY FOLDABLE REARVIEW MIRRORS INTERLOCKED WITH DOOR LOCKS

Kiyoshi Nakayama, Shizuoka, Japan, and Darbesio Luigi, Orbassano, Italy, assignors to Murakami Kaimeido Co., Ltd., Sizuoka, Japan and Fiat Auto SpA, Turin, Italy

Filed Mar. 14, 1990, Ser. No. 493,323
Claims priority, application Japan, Dec. 20, 1989, 1-328527
Int. Cl.[5] G05B *19/42*
U.S. Cl. 318—568.1 **4 Claims**



1. A system for controlling a position of foldable rearview mirrors on a motor vehicle comprising:

at least one rearview mirror foldably mounted on the vehicle for movement between a folded position when not in use and an extended position for use;

a door lock controller operatively connected to door locks of the vehicle for locking and unlocking doors of the vehicle;

at least one outer door lock switch and at least one inner door lock switch operatively connected to said door lock controller for operating said door locks between locking and unlocking positions;

reversible electric motor means operatively connected to said at least one rearview mirror for operating said at least one rearview mirror between said folded and extended positions when actuated;

a rearview mirror controller having an input side and an output side, said output side being operatively connected to said reversible electric motor means for actuating said motor means and said door lock controller and said at least one outer door lock switch and at least one inner door lock switch being operatively connected to said input side;

ignition switch means and operation switch means inside the vehicle connected in series between an electric power source and said input side of said rearview mirror controller, said ignition switch means and operation switch means having open and closed positions, said operation switch means comprising a manual-two circuit reversible motor operation switch;

a driving circuit in said rearview mirror controller operatively connected to said electric motor means for reversing the rotation of said electric motor means in response to said open and closed positions of said operation switch so that when said ignition switch means is in the closed position and said operation switch means is in said open position said driving circuit operates said electric motor means to move said at least one rearview mirror into said folded position and when said operation switch means is in said closed position said driving circuit operates said electric motor means into said extended position;

limit switch means mounted on said at least one rearview mirror for detecting said folded and extended positions of said at least one rearview mirror; and

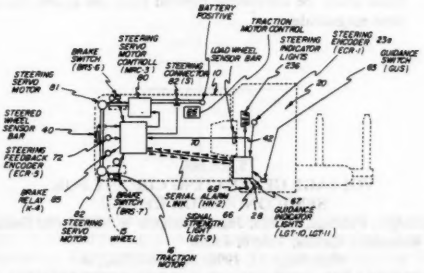
a micro computer operatively connected to said driving circuit for controlling said driving circuit by processing inputs from said switches.

5,008,604

DYNAMIC CLIPPER FOR USE IN A VEHICLE GUIDANCE SYSTEM

Ned E. Dammeyer, New Bremen, and Nick D. Thobe, Celina, both of Ohio, assignors to Crown Equipment Corporation, New Bremen, Ohio

Filed Dec. 5, 1989, Ser. No. 446,502
Int. Cl.[5] G05D *1/00*
U.S. Cl. 318—587 **11 Claims**



1. In a guided vehicle control system including at least one sensing coil for providing an output representative of the presence and location of a buried wire, circuit means responsive to the output of said sensing coil, and means responsive to the circuit means for controlling the direction of the vehicle,

the improvement characterized by the circuit means including noise limiting means for limiting the effect of noise and other spurious signals detected by the sensing coil, said noise limiting means including

voltage limiting means responsive to the output of the sensing coil for limiting the magnitude of the sensing coil voltage to a value determined by a reference voltage,

rectifier means for rectifying the output of said voltage limiting means, and

means for integrating the output of said rectifier means to generate said reference voltage, whereby the output of said rectifier means will be closely related to the strength of the signal induced into the sensing coil from the buried wire.

5,008,605

ELECTRIC DRIVING DEVICE CAPABLE OF ELIMINATING BACKLASH

Tsunemasa Ohara, Tokyo, and Tomoo Shibansi, Utsunomiya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1988, Ser. No. 141,730
Claims priority, application Japan, Jan. 12, 1987, 62-4594
Int. Cl.[5] G05B *11/01*
U.S. Cl. 318—630 **16 Claims**

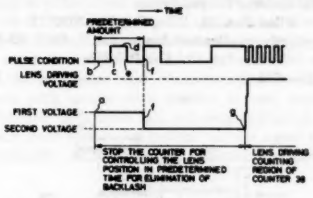
1. An electric driving device capable of eliminating backlash, comprising:

(a) electric drive means for generating a driving force;

(b) actuator means to be activated by the driving force of said electric drive means;

(c) gear means for transmitting the driving force of said electric drive means to said actuator means; and

(d) control means for supplying electric power to said electric drive means to eliminate backlash generated in said gear means, the electric power being supplied at a first power level during an initial period when said electric drive means is started and being supplied at a second power level lower than said first power level subsequent to said initial period, wherein both the first level and the


TIME
PREDETERMINED AMOUNT
PULSE CONDITION
LENS DRIVING VOLTAGE
FIRST VOLTAGE
SECOND VOLTAGE
STOP THE COUNTER FOR CONTROLLING THE LENS POSITION IN PREDETERMINED TIME FOR ELIMINATION OF BACKLASH
LENS DRIVING COUNTING REGION OF COUNTER 38

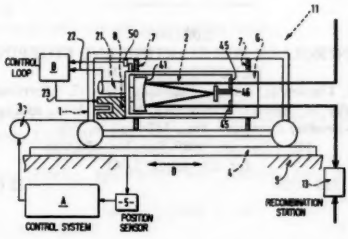
second level are lower than the driving power level supplied to said electric drive means for actuating said actuator means.

5,008,606

DEVICE FOR CONTROLLING VIBRATION-FREE MOVEMENT OF AN OPTICAL ELEMENT IN A STELLAR INTEFEROMETER AND STELLAR INTERFEROMETER COMPRISING SAME

Bertrand Koehler, Cannes; Emmanuel Manil, Le Cannet Rocheville, and Jacques Chapellier, Le Cannet, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Apr. 17, 1990, Ser. No. 509,821
Claims priority, application France, Apr. 17, 1989, 89 05060
Int. Cl.[5] B64C *17/06*
U.S. Cl. 318—649 **15 Claims**



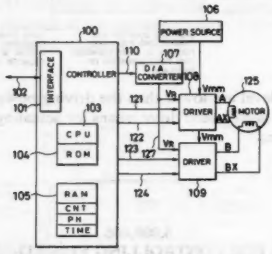
1. Device for static and dynamic control of vibration-free displacement of a mobile optical element of an interferometry device comprising a guide track, a carriage carrying a payload including said optical element and movable along said guide track, a drive motor by which said carriage is driven along said guide track, drive control means connected to said drive motor and adapted to cause said carriage to be driven according to a predetermined law, flexible linkage means between said payload and said carriage enabling relative movement between said payload and said carriage parallel to the direction of displacement of said optical element, a stabilization control loop independent of said drive control means, an accelerometer carried by said payload, responsive to acceleration of said payload parallel to said direction of displacement of said optical element and connected to said stabilization control loop, an actuator operative between said payload and said carriage under the control of said stabilization control loop, a filter means in said stabilization control loop for filtering signals from said accelerometer, a control loop in said drive control means and a position sensor connected to said control loop and adapted to sense the position of said carriage on said guide track.

5,008,607

DRIVING SYSTEM FOR STEPPING MOTOR

Takeshi Ono, Yokohama; Masahiro Sakamoto, Tokyo, and Tadashi Takano, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1989, Ser. No. 372,822
Claims priority, application Japan, Jul. 1, 1988, 63-162608
Int. Cl.[5] H02P 8/00
U.S. Cl. 318—696 5 Claims



1. A driving system for a stepping motor wherein a stepping motor is rotatively driven by a predetermined number of steps for each driving trigger, comprising:

a stepping motor having a plurality of energization coils through each of which an energization current flows to drive said stepping motor;

a plurality of drivers for applying said energization current to the respective energization coils of said stepping motor;

a counting means for counting a time between two successive driving triggers; and

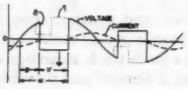
an energization controlling means controlling said energization current of said stepping motor in response to said time counted by said counting means.

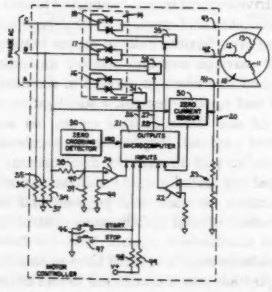
5,008,608

CONTROLLER FOR STARTING AND STOPPING ELECTRIC MOTORS

Peter J. Unsworth, Lewes, England; John C. Merrison, and Timothy M. Rowan, Wauwatosa, both of Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Dec. 26, 1989, Ser. No. 456,910
Int. Cl.[5] H02P 5/40
U.S. Cl. 318—729 22 Claims





14. A method for controlling the torque of an electric motor that is coupled by a switch means to a source of alternating voltage and current, the switch means being of a type which is conductive from when a trigger pulse is applied until the magnitude of alternating current therethrough goes to zero, said method comprising repeatedly executing the steps of:

(a) measuring a phase difference θ between the alternating voltage and current from the source;

(b) defining a reference value θ_{REF};

(c) calculating a control value θ according to the equation $\theta=\phi+K\gamma$, where K is a positive number and where γ corresponds to the length of a previous interval during which the switch means was non-conductive;

(d) producing an error signal representing the difference between the control value θ and the reference value θ_{RREF};

(e) altering the value of γ in response to the error signal; and

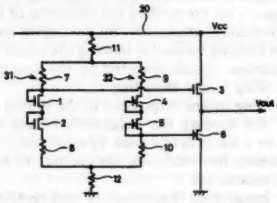
(f) applying a trigger pulse to the switch means at the end of an interval substantially equal to the altered value of γ from when the alternating current from the source has a zero magnitude.

5,008,609

VOLTAGE GENERATING CIRCUIT FOR SEMICONDUCTOR DEVICE

Takahiko Fukiage, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1990, Ser. No. 526,740
Claims priority, application Japan, Jun. 6, 1989, 1-144776
Int. Cl.[5] G05F 3/20
U.S. Cl. 323—313 3 Claims



1. A voltage generating circuit for a semiconductor memory device, comprising:

a first serial connection circuit including first resistance means, one or more first conductive-type field effect transistors, and second resistance means which are connected in series to each other, and

a second serial connection circuit including third resistance means, one or more second conductive-type field effect transistors, and fourth resistance means which are connected in series to each other, said first and second serial connection circuits being connected in parallel, each of said first and second conductive-type field effect transistors having its gate connected to its first conductive electrode,

fifth resistance means interposed between a first reference potential source and said first and third resistance means,

sixth resistance means interposed between a second reference potential source and said second and fourth resistance means,

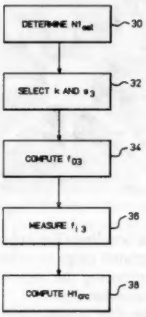
a first output terminal connected to a first conductive electrode of any of said first conductive-type field effect transistors, and

a second output terminal connected to a second conductive electrode of any of said second conductive-type field effect transistors.

5,008,610
METHOD FOR HARMONIC NUMBER DETERMINATION IN A MICROWAVE FREQUENCY COUNTER

Nancy W. Nelson, San Jose; Lee D. Cosart, III, Palo Alto; Luiz Peregrino, Cupertino, and Eric M. Ingman, Los Altos Hills, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 31, 1989, Ser. No. 388,208
Int. Cl.[5] G01R *25/02*
U.S. Cl. 324—84 15 Claims



1. In a harmonic heterodyne converter wherein the frequency of an input signal is determined from a local oscillator frequency, an intermediate frequency obtained by mixing the local oscillator frequency with the input signal, and a harmonic number, a method for determining a generalized harmonic number H, comprising the steps of:

computing an estimated generalized harmonic number $H1_{est}$ from closely-spaced first and second local oscillator frequencies f_{01} and f_{02} and first and second intermediate frequencies f_{i1} and f_{i2} obtained by successively mixing said first and second local oscillator frequencies with the input signal;

selecting a third local oscillator frequency f_{03} such that the corresponding generalized harmonic number H3 differs from the estimated harmonic number by a predetermined integer, k;

measuring a third intermediate frequency f_{i3} obtained by mixing the third local oscillator frequency with the input signal; and

computing a corrected generalized harmonic number $H1_{crc}$ from the first and third local oscillator frequencies and the first and third intermediate frequencies.

5,008,611
METHOD OF ELIMINATING THE EFFECTS OF BIREFRINGENCE FROM THE DETECTION OF ELECTRIC CURRENT USING FARADAY ROTATION

Edward A. Ulmer, Jr., Clearwater, Fla., assignor to Square D Company, Palatine, Ill.

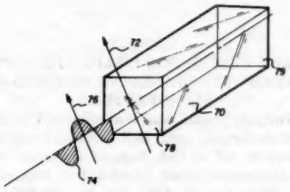
Filed Mar. 14, 1989, Ser. No. 323,599
Int. Cl.[5] G01R *15/00, 31/00*
U.S. Cl. 324—96 29 Claims

1. A method for minimizing the effect of stress birefringence within the optical apparatus of an optical current transducer providing an optical current signal proportional to a time-varying target current of electricity to be measured, said optical current transducer including at least one optical medium having a Faraday effect, said optical medium receiving a light beam of polarized light and transmitting the received light to produce an optical current signal, comprising the steps of:

geometrically selecting a geometric configuration of said optical medium to be placed within a magnetic field produced by said target current;

orientatedly selecting said optical medium to have an entrance surface, and an exit surface, said optical medium having fast and slow known characteristic directions in which if polarized light is oriented in the absence of a magnetic field the polarized light is transmitted without a change in polarization angle, a known Verdet constant, a known permeability, a known approximate birefringence comprising the difference between a fast index of refraction and a slow index of refractions, each index associated with an associated said characteristic direction and a known path length with respect to said received and transmitted light from said entrance surface to said exit surface from which said optical current signal exits;

mathematically determining the existence and identity of at



least one non-birefringent angle of polarization with respect to said characteristic direction of said optical medium at which a polarized beam of light may be received by and transmitted through said optical medium along said path length and produce said optical current signal with a time-varying component, said optical current signal having a current polarization angle proportional to and produced by the target current and proportional to the path, length, the root-mean-square average value of said time-varying component being proportional to the root-mean-square average value of said target current;

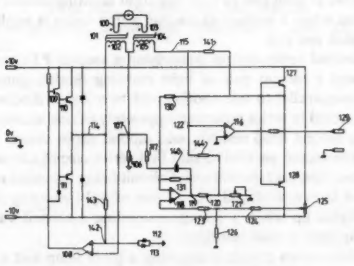
aligning said received light with said non-birefringent angle; and

measuring said current polarization angle.

5,008,612
CURRENT SENSOR

Donald V. Otto, Auckland, New Zealand, assignor to Unisearch Systems Limited, Pakuranga, New Zealand

Filed Aug. 24, 1989, Ser. No. 399,837
Claims priority, application New Zealand, Aug. 24, 1988, 225931
Int. Cl.[5] G01R *33/00*
U.S. Cl. 324—117 R 8 Claims



1. Apparatus for sensing currents comprising:

sensing means including first and second transformers each having a primary winding connected in series and defining a loop for carrying a current to be sensed and each having a secondary winding which is electrically isolated from the primary winding and a magnetic core for magnetically coupling the primary winding with the secondary winding;

means for feeding the secondary winding of said first transformer with a cyclic magnetization current to cyclically drive the magnetic core of said first transformer into saturation;

separating means for separating said cyclic magnetization current from a first sensed current component induced from said primary winding into the secondary winding of said first transformer;

processing means for processing said first sensed current component together with a second sensed current component induced from said primary winding into the secondary winding of said second transformer to provide an output signal substantially proportional to the current to be sensed.

5,008,613

VOLTAGE TESTER FOR GRADUATED OPTICAL DISPLAY OF A VOLTAGE AND METHOD FOR ITS MANUFACTURE

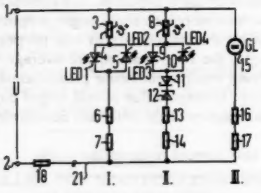
Heinrich-Wolfgang Steinel, Bad Woersihofen; Ulrich Armonier, Rheda-Wiedenbrueck, and D-F Schulze-Froehlich, Herzebrock-Clarholz, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 23, 1989, Ser. No. 397,530

Claims priority, application European Pat. Off., Aug. 26, 1988, 88113986.9

Int. Cl.[5] G01R *19/14, 31/00*

U.S. Cl. 324—133 **8 Claims**



1. A voltage tester for graduated optical display of voltages, comprising:

test tips to which a voltage is applied;

circuit arrangement of electrical components connected to said test tips, said circuit arrangement including:

a first series circuit connected across said test tips comprising a first PTC-resistor and a first pair of light emitting diodes connected antiparallel to one another and a first drop resistor, said first series circuit being balanced so that at least one of said two light emitting diodes lights up when a voltage exceeding a first value is applied to said test tips;

a second series circuit comprising a second PTC-resistor and a second pair of light emitting diodes connected antiparallel to one another and two Zener diodes connected in series polarized oppositely of one another and a second drop resistor, said second series circuit being connected parallel to said first series circuit across said test tips, said second series circuit being balanced so that at least one of said second pair of light emitting diodes lights up when a voltage exceeding a second value is applied to said test tips;

a third series circuit comprising a glow lamp and a third drop resistor, said third series circuit being connected parallel to said first series circuit and to said second series circuit across said test tips, said third series circuit being balanced so that said glow lamp lights up when a voltage exceeding a third value is applied to said test tips; and

a current-limiting resistor connected in series with said first, second and third series circuits.

5,008,614

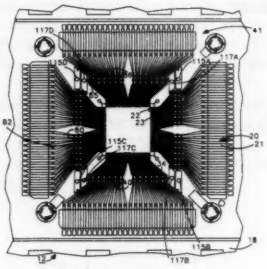
TAB FRAME AND PROCESS OF TESTING SAME

Robert W. Shreeve, and Melissa D. Boyd, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 11, 1988, Ser. No. 255,230

Int. Cl.[5] G01R *31/28;* **H03F** *1/52;* **H01L** *23/50*

U.S. Cl. 324—158 F **8 Claims**



1. A tape automated bonding (TAB) process for testing TAB frames and dies, integrated chips or other similar components mounted thereon, comprising the steps of:

A. using a TAB frame having:

a. a relatively thin film of dielectric material;

b. a plurality of substantially adjacent inner lead bonds pads disposed on said film, in close proximity to the die, said inner lead pads surrounding the die in a desired predetermined pattern;

c. a plurality of substantially adjacent outer lead pads on the film, for providing input/output ports to the die, said outer lead pads being generally disposed in a predetermined pattern, at the outer periphery of the frame, to permit easy accessiblity for soldering to a printed circuit board when the frame is excised from the dielectric film;

d. a plurality of substantially adjacent test probe pads disposed in a predetermined pattern on the film, intermediate said inner lead pads and the outer lead pads, for providing test points for the frame and the die thereon, said test probe pads being supported by the dielectric film for maintaining a substantially fixed spacing between two adjacent test probe pads; and

e. conducting means for electrically interconnecting said inner lead pads, said outer lead pads and said test probe pads, in a predetermined pattern, wherein portions of said conductive means interconnecting said inner lead pads and said test probe pads are generally supported by, and disposed onto the dielectric film, in order to minimize the bending and twisting of the frame and of the pattern of said test probe pads;

B. excising the die from the frame in the form of a coupon, said coupon including the die and all of said test probe pads, and wherein the excision outline of said coupon is selected intermediate said test probe pads and said outer lead pads so as to exclude said outer lead pads from being included in said coupon;

C. aligning the die; and

D. testing said coupon and the die.

5,008,615

MEANS AND METHOD FOR TESTING INTEGRATED CIRCUITS ATTACHED TO A LEADFRAME

Hugh W. Littlebury, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1989, Ser. No. 431,346

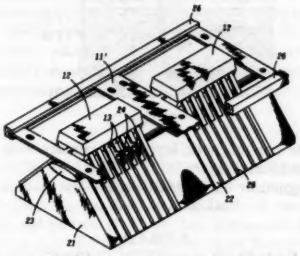
Int. Cl.[5] G01R *1/06, 31/02*

U.S. Cl. 324—158 F **9 Claims**

4. A test fixture for testing a plurality of packaged integrated

circuits which are attached to a leadframe, wherein each of the integrated circuits has a plurality of leads which are isolated from the leadframe, the test fixture comprising:

a membrane test head having a plurality of contacts thereon positioned underneath the plurality of leads;



a tester coupled to the test head;

a drive means for moving the test head towards and away from the plurality of leads, wherein the membrane test head couples to a plurality of packaged ICs at one time.

5,008,616

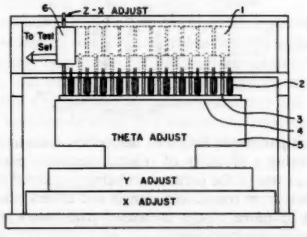
FLUIDICS HEAD FOR TESTING CHEMICAL AND IONIC SENSORS

Imants R. Lauks, Morrisville, Pa.; Henry J. Wieck, Plainsboro, and Gregory M. Bandru, Ewing, both of N.J., assignors to I-Stat Corporation, Princeton, N.J.

Filed Nov. 9, 1989, Ser. No. 434,660

Int. Cl.[5] G01R *31/02;* **G01N** *27/00;* **H01L** *29/66*

U.S. Cl. 324—158 F **8 Claims**



1. A fluidics head or a multiplicity of heads in an array thereof for automatically testing chemical and ionic sensing electronic circuit devices comprising:

a fluid confining cell having at least one open orifice to contain a known test fluid,

means for filling said test fluid into said open orifice and discharging said test fluid from said open orifice when said orifice is in leakproof engagement with said sensing electronic circuit device to be tested, and

means for providing electrical contacts to said sensing electronic circuit device so as to test said sensing electronic circuit device with said test fluid, wherein said open orifice has an internal shape such that fluid contamination in said fluid confining cell is minimized during discharge of said test fluid.

5,008,617

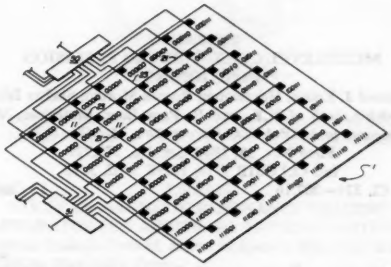
FUNCTIONAL TESTING OF ULTRA LARGE AREA, ULTRA LARGE SCALE INTEGRATED CIRCUITS

Wolodymyr Czubatyj, Warren, and Ronald Himmler, Sterling Heights, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jun. 20, 1989, Ser. No. 369,784

Int. Cl.[5] G01R *31/00, 31/02*

U.S. Cl. 324—158 R **5 Claims**



1. A method of testing a large area active matrix liquid crystal display; said method including the steps of:

(a) providing a matrix array which includes a plurality of rows and columns of address lines; each pair of adjacent row address lines and column address lines defining a picture element; each picture element including switching means for discretely electrically interrogating said element; said switching means including a plurality of thin film layers of silicon alloy material;

(b) providing a chargeable dry powder;

(c) providing the matrix array of picture elements, including the layers of silicon alloy material of the switching means, in proximity to the chargeable powder;

(d) electrically activating the switching means of the matrix array; and

(e) applying an electrical potential between the switching means and the powder, said potential causing particles of the chargeable powder to adhere to the activated picture elements of the matrix array.

5,008,618

SCAN TEST APPARATUS FOR ASYNCHRONOUS CIRCUITRY

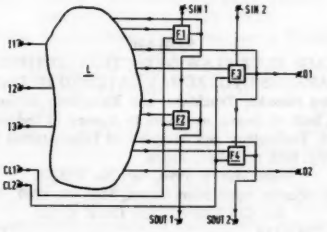
Max Van Der Star, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1990, Ser. No. 468,534

Claims priority, application Netherlands, Jan. 23, 1989, 8900151

Int. Cl.[5] G01R *31/00, 31/02*

U.S. Cl. 324—158 R **12 Claims**



1. In a digital signal processing circuit jointly controlled by first and second mutually asynchronous clock signals, the improvement for enabling scan testing of said circuit, compris-

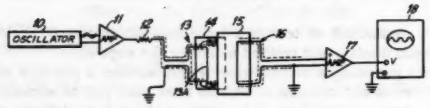
ing: first and second scan chains of cascaded bistable elements connected to data inputs and outputs of said circuit which first and second scan chains are respectively independently controlled by said first and second clock signals; first and second test data inputs respectively connected to said first and second scan chains; and first and second result data outputs respectively connected to said first and second scan chains.

5,008,619

MULTILEVEL CIRCUIT BOARD PRECISION POSITIONING

Raymond J. Keogh, Huntington; Ronald Morino, Shelter Island Heights, both of N.Y., and R. Page Burr, Matinicus, Me., assignors to AMP-AKZO Corporation, Melville, N.Y.

Filed Nov. 18, 1988, Ser. No. 272,929
Int. Cl.[5] G01B *7/14;* H05K *3/02, 3/10*
U.S. Cl. 324—207.16 **15 Claims**



1. An apparatus for determining the relative position of at least a first object with respect to a second object, the first object being a layer of a circuit board and the second object being a surface associated with a machine for making circuit boards or a second layer of a circuit board, the apparatus comprising:

a first geometric pattern of conductive material disposed on the first object;

a second geometric pattern of conductive material which is disposed on the second object in juxtaposition with the first, such that the perpendicular projection of said second geometric pattern on the first object is centered on about said first geometric pattern;

means for applying a predetermine value of alternating current to said first pattern to establish an electromagnetic field surrounding said first pattern;

means for detecting the magnitude of the voltage induced in said second pattern by the field established by said first pattern;

whereby the position of the first object relative to the second object is indicated by the magnitued of the detected voltage resulting from the said predetermined value of alternating current.

5,008,620

LEAKAGE FLUX FLAW DETECTION METHOD AND APPARATUS UTILIZING A LAYERED DETECTOR

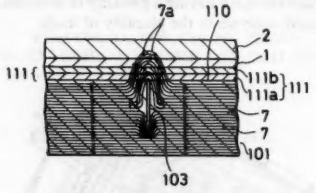
Katusnobu Nonaka, Tsuchiura, and Kazuyoshi Sekine, Yokohama, both of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Mar. 6, 1990, Ser. No. 489,235
Claims priority, application Japan, Mar. 10, 1989, 1-58478
Int. Cl.[5] G01N *27/82;* G01R *33/12*
U.S. Cl. 324—213 **13 Claims**

5. A leakage flux flaw detection apparatus comprising:

a magnetic recording material one surface of which is in contact with a test surface of a test material;

an auxiliary recording member with a ferromagnetic layer and a non-magnetic layer arranged one on the other so



that the non-magnetic layer is in contact with the magnetic recording layer;

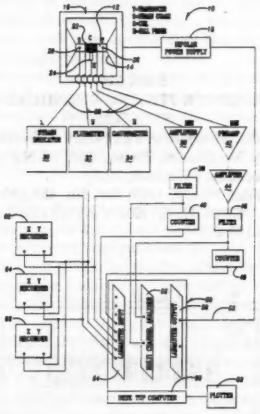
and a magnetizer for magnetizing the test material.

5,008,621

MULTIPARAMETER MAGNETIC INSPECTION SYSTEM WITH MAGNETIC FIELD CONTROL AND PLURAL MAGNETIC TRANSDUCERS

David C. Jiles, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Apr. 14, 1989, Ser. No. 338,966
Int. Cl.[5] G01R *33/12;* G01N *27/72*
U.S. Cl. 324—227 **21 Claims**



1. A multiparameter magnetic inspection system for deriving and displaying a plurality of related magnetic parameters of specimens, some of the parameters being measured in that they are obtained from transducer signals and others being derived from one or more of the measured parameters, the system comprising in combination:

housing means for holding a specimen to be inspected;

magnetic field means connectable to the housing means for applying magnetic fields of various properties and characteristics to the specimen;

a plurality of inspection transducers of different types mountable on or adjacent to the specimen in the housing means for inspecting the specimens and producing transducer signals related to and representing measures of different magnetic specimen parameters as a result of magnetic fields applied thereto;

measuring circuitry means for each inspection transducer to receive and convert the transducer signals into a plurality of measurement signals; the measurement signals being independent in that they result from transducer signals which are produced by the plurality of different inspection transducers but related in that they are produced

from the same specimen subjected to the same magnetic fields;

communication cable means for connecting the inspection transducers with the analytical circuit means; and

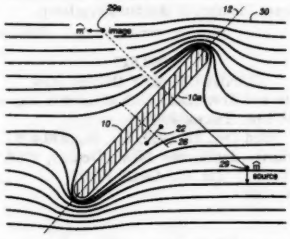
control means for instructing application of and changes in magnetic fields to the specimen; receiving the measurement signals resulting from the application of and changes in the magnetic field; and contemporaneously and rapidly from said measurement signals compiling the measured parameters, deriving the derived parameters from the measured parameters, and displaying the related measured- and derived parameters for the inspected specimen.

5,008,622

SUPERCONDUCTIVE IMAGING SURFACE MAGNETOMETER

William C. Overton, Jr., Los Alamos; David B. van Hulsteyn, Santa Fe, and Edward R. Flynn, Los Alamos, all of N. Mex., assignors to United States Department of Energy, Washington, D.C.

Filed Dec. 21, 1989, Ser. No. 454,607
Int. Cl.[5] G01R *33/02, 33/035*
U.S. Cl. 324—248 **44 Claims**



1. Apparatus for detecting nearby magnetic sources by performing imaging SQUID magnetometry and gradiometry comprising:

one or more first superconducting coil means connected in series opposition to one or more second superconducting coil means for sensing nearby magnetic signals and electrically cancelling distant magnetic noise;

superconducting plate means interposed between and in close proximity to said one or more first and second superconducting coil means for imaging said nearby magnetic signals and deflecting said distant magnetic noise away from said first and second superconducting coil means;

wherein said one or more first and second superconducting coil means are connected to a SQUID.

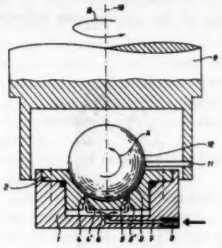
5,008,623

METHOD AND APPARATUS FOR TESTING BALLS WITH THE USE OF EDDY CURRENTS

Hendrik Dolfsma, Tull en 't Waal, and Hendrik van Engelenburg, Driebergen, both of Netherlands, assignors to SKF Industrial Trading and Development Company BV, DT Nieuwegein, Netherlands

Filed Mar. 19, 1990, Ser. No. 495,349
Claims priority, application Netherlands, Apr. 5, 1989, 8900848
Int. Cl.[5] G01R *33/00;* G01N *27/72*
U.S. Cl. 324—262 **6 Claims**

1. In a method employing eddy currents for checking damage on the surface of a round, e.g., ball-shaped, metal object, wherein the object is supported and made to rotate around at least one axis while an electronic contact-free scanner or sensor is aimed at the surface of the object, the improvement comprising placing the round object on a fixed support, and blowing a gaseous medium against the object to flow between the support and the object in a direction to form a gas layer



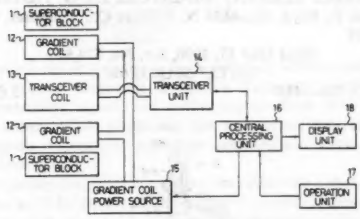
that supports the object, said step of blowing comprising blowing the gas to impart a rotational movement to the object.

5,008,624

NUCLEAR MAGNETIC RESONANCE IMAGING APPARATUS FOR ARBITRARY PATIENT POSTURE

Tadatoki Yoshida, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 30, 1989, Ser. No. 373,583
Claims priority, application Japan, Jul. 6, 1988, 63-166856
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **18 Claims**



1. A nuclear magnetic resonance imaging apparatus, comprising;

a main magnet having two physically disconnected poles arranged in parallel for generating a static magnetic field in an open space between the two physically disconnected poles each of the two physically disconnected poles being made of a superconductor block capable of producing a magnetic field independently; and

carrier means for carrying an object to be examined into the static magnetic field, capable of supporting the object at arbitrary angles with respect to a floor.

5,008,625

METHOD AND APPARATUS FOR LOGGING AND DISPLAYING A TWO DIMENSIONAL IMAGE OF SPONTANEOUS POTENTIAL

Min-Yi Chen, West Redding, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 1, 1989, Ser. No. 430,214
Int. Cl.[5] G01V *3/26, 3/34*
U.S. Cl. 324—351 **16 Claims**

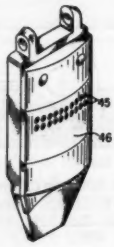
1. A system for producing indications of the spontaneous potentials existing along a longitudinally extending segment of an exposed wall of an earth formation, comprising:

an electrically insulating electrode support, an array of mutually-insulated SP electrodes supported thereon and recessed below a surface of said support, and means for moving said support along a predetermined logging direction with said surface in contact with said wall;

said array comprising a plurality of said electrodes differ-

ently positioned along a direction transverse to said direction of logging motion of said array;

potential measuring means as connected to each of said electrodes for producing respective SP signals indicative of the values of the spontaneous potentials at said electrodes; and



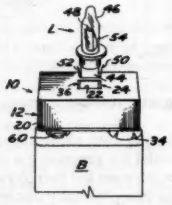
visual-image forming means supplied with said SP signals for forming a visually-observable twodimensional image corresponding to the pattern of SP values in the segment of said wall traverse by said array during said logging operation and extending substantially continuously transversely of said wall.

5,008,626

DIRECT CURRENT MINIATURE LAMP TESTER

William P. Boyd, Sr., 4624 N. William Ct., Stillwater, Okla. 74075

Filed May 17, 1990, Ser. No. 524,533
Int. Cl.[5] G01R *31/00*
U.S. Cl. 324—414 **2 Claims**



1. A direct current tester for a bayonet-type miniature electric lamp having an incandescent filament and a shunt circuit, comprising:

a dielectric rectangular translucent body having a top surface and having a bottom surface overlying a dielectric thin, when compared with the thickness of said body, planar base,

said body having a central upwardly open rectangular socket dimensioned for nesting in electrical circuit contacting relation the bayonet end portion of a miniature electric lamp;

a pair of upstanding strap metal L-shaped body socket terminals, each terminal of said pair of body socket terminals having a foot portion and a leg portion and having their respective foot portions flatly interposed between said base and said body and secured in spaced-apart relation to said base and having their respective leg portions coextensive with and flatly disposed, in confronting relation, on opposing surfaces of the walls defining the body socket;

a first pair of snap-tab type battery terminals,

one terminal of said first pair of battery terminals depending from said base and connected with the foot portion of one body socket terminal of said pair of body socket terminals,

the other battery terminal of said first pair of battery terminals depending from and connected with said base in longitudinally spaced relation with respect to the position of the foot portion of the other said body socket terminal on said base;

a dry cell direct current battery having a second pair of battery terminals cooperatively received in electrical conducting relation by said first pair of battery terminals; and,

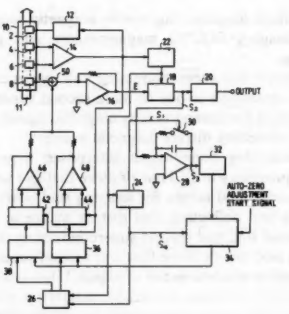
circuit means supported by the body and electrically connected with the said other battery terminal of said first pair of battery terminals and having an auxiliary miniature electric lamp having an incandescent filament circuit interposed between the other said foot portion of said other body socket terminal of said pair of body socket terminals and said other terminal of said first pair of battery terminals for indicating a closed circuit through the incandescent filament of a miniature lamp under test, by the battery potential exciting said auxiliary incandescent filament and the incandescent filament of a miniature lamp under test or a closed circuit through only the shunt circuit of a miniature lamp under test by the illuminating glow of said body from the battery potential excited incandescent filament of the auxiliary lamp.

5,008,627

CONDUCTIVITY DETECTOR

Koji Tsutsuta, and Kiwao Seki, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1989, Ser. No. 420,479
Claims priority, application Japan, Oct. 19, 1988, 63-261511
Int. Cl.[5] G01N *27/02*
U.S. Cl. 324—444 **3 Claims**



1. An apparatus comprising:

a cell for flowing an electrolyte;

a pair of first electrodes disposed in said cell and separated by a predetermined distance;

means for supplying said pair of first electrodes with a variable A.C. voltage signal;

a pair of second electrodes disposed between said pair of first electrodes in said cell and separated by a predetermined distance for detecting the voltage across said second electrodes;

means for controlling the output voltage of said variable A.C. voltage signal supplying means so as to maintain the voltage across said second electrodes at a predetermined value;

means for generating a variable A.C. reference signal with reverse phase to the A.C. voltage signal;

means for adding an output A.C. current flowing between said pair of first electrodes to the A.C. reference signal;

means for determining whether the output of said adding means reduces to zero or not; and

means for correcting the A.C. reference signal so as to reduce the output signal of said adding means to zero;

wherein said zero determining means includes;

a synchronous rectifying circuit for rectifying the output signal of said adding means;

an interval integral circuit for performing the interval integral of the output of said synchronous rectifying circuit, and

a comparator for determining whether the output of said interval integral circuit is zero or not, the interval integral circuit operating in synchronism with the output signal of said synchronous rectifying circuit and when the output of said interval integral circuit reduces to zero, said zero determining means determining the completion of the zero adjustment operation.

5,008,628

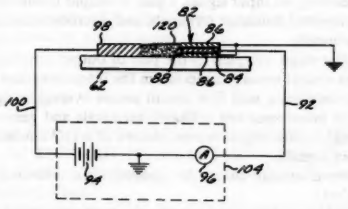
MEASUREMENT OF ELECTRICAL RESISTIVITY OF PARTICULATE ENTRAINED IN A GAS STREAM

Henry V. Krigmont, Seal Beach, and Everett L. Coe, Jr., Downey, both of Calif., assignors to Wahlco, Inc., Santa Ana, Calif.

Filed Jun. 5, 1989, Ser. No. 361,273

Int. Cl.[5] G01R *27/02*

U.S. Cl. 324—693 **16 Claims**



1. Particulate resistivity measurement apparatus, comprising:

a substrate having a first side and a second side;

two adjacently positioned electrodes supported on the first side of the substrate, including

a measurement electrode, and

a reference electrode;

means for applying a vacuum to the second side of the substrate to controllably draw gas through the substrate so that particulate matter carried by the gas is deposited on the first side of the substrate;

a measurement power supply that applies a measurement voltage between the reference electrode and the measurement electrode; and

a current measurement meter that measures the current flowing between the reference electrode and the measurement electrode due to the applied measurement voltage.

5,008,629

FREQUENCY SYNTHESIZER

Motoi Ohba, Yokohama; Hiroyuki Yabuki, Kawasaki, and Mitsuo Makimoto, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jun. 20, 1989, Ser. No. 369,408

Claims priority, application Japan, Jun. 20, 1988, 63-151619; Jul. 22, 1988, 63-184330

Int. Cl.[5] H03L *7/00;* **H03B** *19/00*

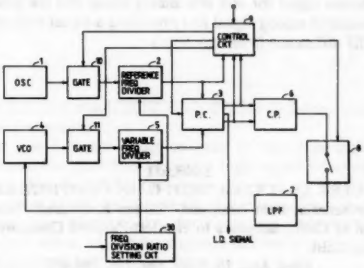
U.S. Cl. 328—14 **2 Claims**

1. A frequency synthesizer for use in a multichannel radio apparatus, said frequency synthesizer having a first oscillator for outputting a signal having a reference frequency, a first frequency divider for dividing the frequency of the signal outputted from said first oscillator, a second oscillator for outputting a signal having a desired frequency, a second frequency divider for dividing the frequency of the signal outputted by said second oscillator by a variable number, a phase comparator for comparing the phase of the signal outputted from said first frequency divider with that of the signal outputted from said second frequency divider, a charge pump for converting an output signal of said phase comparator and outputting the converted signal as an integrator drive signal and an integrator for integrating the output signal of said charge pump and controlling said second oscillator, the improvement comprising:

a first gate circuit provided between said first oscillator and said first frequency divider;

a second gate circuit provided between said second oscillator and said second frequency divider;

a third gate circuit between said charge pump and said integrator;



a control circuit responsive to an output signal from said first or second frequency divider, a frequency synthesizer controlling signal, and output signals from said phase comparator for producing first and second gate control signals respectively applied to said first and second gate circuits; and

a frequency division ratio setting circuit having a shift register, an N-bit data latch responsive to parallel outputs from said shift register, and means for controlling said data latch by logical product of a first signal inputted from a strobe input terminal and a second signal outputted from another data latch which holds a first or last one bit of said parallel outputs of said shift register thereby controlling frequency division ratio of said first and second frequency dividers by outputs of said N-bit data latch.

5,008,630

STATIONARY PROBABILITY INTEGRATOR SYSTEM

Paul F. Reimel, Quakertown, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 26, 1969, Ser. No. 811,695

Int. Cl.[5] H03K *5/00;* **G01R** *23/16*

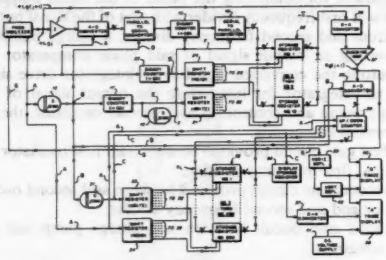
U.S. Cl. 328—165 **7 Claims**

1. A system for suppressing noise in a spectrum analysis within a predetermined frequency range of a complex waveform sample, the analysis being an analog signal of predetermined duration composed of a plurality of discrete magnitudes in equal increments of time indicative of the energy levels of a corresponding plurality of frequency elements of predetermined bandwidths and of progressively increasing frequency, comprising, in combination:

timing means providing pulses at time intervals synchronous with equal multiples of said time increments;

averaging means receiving one of said analog signals and said timing means pulses and providing a signal of said predetermined duration composed of a plurality of discrete magnitudes in said time intervals indicative of the average energy levels of a corresponding plurality of

ensembles of the frequency elements of progressively increasing frequency; and



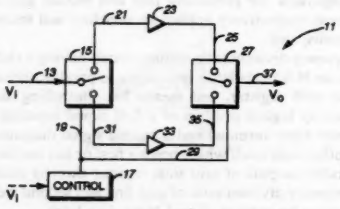
combining means concomittantly receiving the averaging means signal for said one analog signal and the next-consecutive analog signal and providing a signal indicative of the difference in energy levels.

5,008,631

PULSE ANALYZER WITH GAIN COMPRESSION

Dieter Scherer, Palo Alto, and William E. Strasser, Montara, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 16, 1989, Ser. No. 394,407
Int. Cl.[5] H03F *3/68*
U.S. Cl. 330—51 **5 Claims**



1. A method for reducing the dynamic range of an incoming electrical signal, the method comprising the steps of:

determining the magnitude of the incoming signal;

providing a control signal that has a first value if the incoming signal magnitude exceeds a predetermined value, and that has a second value if the incoming signal magnitude does not exceed a predetermined value;

providing a control override signal, having an active state and an inactive state, that, in its active state, overrides the control signal and sets the control signal value equal to the first value; and

passing the incoming electrical signal through an amplifier circuit that receives the control signal and control override signal, to multiply the incoming signal by a first amplification coefficient A_1 and to issue this amplified signal as an output signal if the control signal value received has the first value, and to multiply the incoming signal by a second amplification coefficient A_2 and to issue this amplified signal as an output signal if the control signal value received has the second value, where the magnitudes of the amplification coefficients satisfy $O<A_1<A_2$,

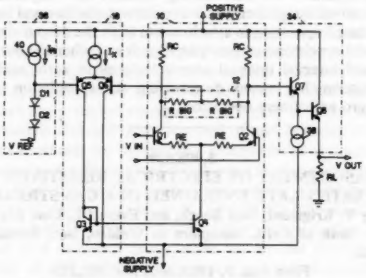
whereby the dynamic range of the collection of the first and second output signals is less than the dynamic range of the incoming signal.

5,008,632

TEMPERATURE COMPENSATED FEEDBACK CIRCUIT FOR SETTING AND STABILIZING AMPLIFIER DC BIAS POINTS

Philip H. Sutterlin, Durham, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1989, Ser. No. 429,665
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—256 **1 Claim**



1. An improved amplifier comprising:

a differential amplifier stage having differential input devices (Q_1, Q_2) with a pair of differential input terminals for receiving an input signal, a pair of output terminals, interconnected collector terminals, and interconnected emitter terminals;

a buffer stage, coupled to the pair of output terminals;

a first circuit means connected in the interconnected collector terminals, said first circuit means averaging signals in said interconnected collector terminals and generating a single-ended signal representative of a DC component in said signals;

a second circuit means for generating a reference signal (Vref);

a third circuit means to compensate for temperature and process variations caused by said buffer stage, coupled to the second circuit means;

an error amplifier coupled to the third circuit means for comparing Vref with the single-ended signal to generate a bias current signal which directly flows through (Q1, Q2) to set the DC operating point of said differential amplifier stage.

5,008,633

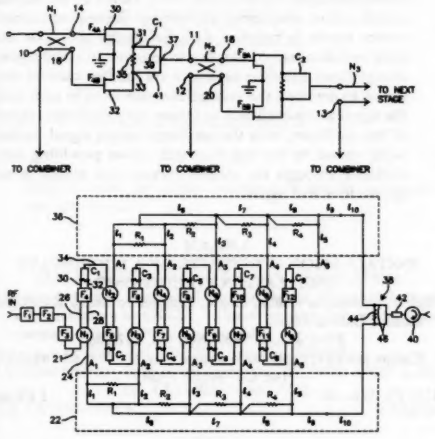
CROSS-FED FET POWER-CHIP

Harvey K. Y. Hom, Santa Monica, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Mar. 29, 1990, Ser. No. 502,077
Int. Cl.[5] H03F *3/193, 3/68*
U.S. Cl. 330—277 **5 Claims**

1. A cross-fed FET power-chip amplifier in which a first stage consists of two FET devices, each having a gate, a source and a drain; a wide band four port directional coupler having an input terminal, an output terminal and two driver inputs; means for connecting an input signal to said input terminal, said directional coupler being designed to produce the majority of its output at said output terminal and a lesser output in each of said two driver inputs which have a 90° phase relationship; means connecting each of said driver inputs to a gate of one of said FET devices; a broadband 90°. coupler having two inputs and an output with a resistor across its inputs; means connecting the sources of said FET devices to common and the drains of said FET devices each to one input of the broadband 90° coupler to accommodate the 90° offset at the gates; at least one subsequent stage configured the same as said first stage; means coupling the output of the broadband coupler to the input terminal of the directional coupler of the subsequent

stage; at least one combiner; and means for coupling the output terminals of the directional couplers of each stage and the



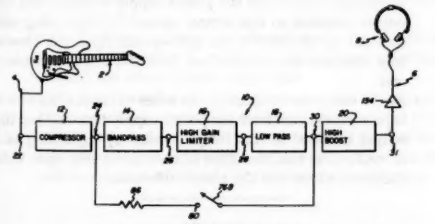
broadband coupler of the final stage to said at least one combiner to derive an output signal.

5,008,634

SYSTEM FOR CONTROLLING THE DYNAMIC RANGE OF ELECTRIC MUSICAL INSTRUMENTS

David E. Christian, Danbury, Conn., assignor to C. B. Labs, Inc., Bridgeport, Conn.

Continuation-in-part of Ser. No. 274,443, Nov. 18, 1988, Pat. No. 4,899,115. This application Oct. 4, 1989, Ser. No. 417,789
Int. Cl.[5] H03F *3/191*
U.S. Cl. 330—306 **17 Claims**



1. A circuit for controlling electrical signals from at least one transducer associated with an electrified musical instrument, said circuit having input and output terminals and comprising:

(a) bandpass filter circuit means operatively coupled to said transducer for receiving signals therefrom and passing therethrough a relatively narrow bandwidth of said signals;

(b) limiting circuit means operatively connected to said bandpass filter circuit means for limiting the signals received from said filter circuit means, said limiting circuit means including at least a pair of oppositely connected semiconductor diode paths for operating substantially in the linear region of said diode forward characteristics; and

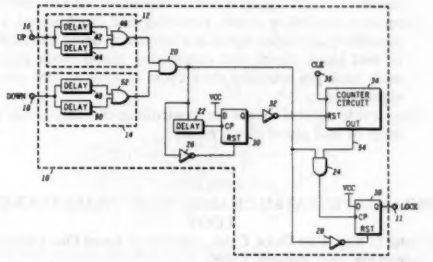
(c) low pass filter circuit means operatively coupled to said limiting circuit means to further condition signal.

5,008,635

PHASE-LOCK-LOOP LOCK INDICATOR CIRCUIT

Carl C. Hanke, Mesa; Carlos D. Obregon, Tempe, and Ahmad H. Atriss, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 25, 1990, Ser. No. 542,542
Int. Cl.[5] H03L *7/06*
U.S. Cl. 331—1 A **13 Claims**



1. A circuit for indicating when a phase-lock-loop circuit is in lock comprising:

gate circuit means being coupled to the phase-lock-loop circuit for providing an output logic signal responsive to the phase lock loop circuit being in lock;

a counter circuit responsive to said output logic signal of said gate circuit means for providing an output logic signal when said counter circuit has reached a predetermined count;

circuit means for enabling said circuit when said output logic signal of said circuit means is in a first logic state and disabling said counter circuit when said output logic signal of said gate circuit means is in a second logic state; and

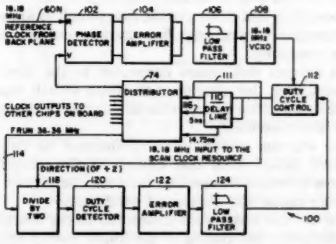
a latch circuit responsive to said output logic signal of said counter circuit for providing a lock signal at an output terminal of the latch circuit.

5,008,636

APPARATUS FOR LOW SKEW SYSTEM CLOCK DISTRIBUTION AND GENERATION OF 2X FREQUENCY CLOCKS

Scott Markinson, Goffstown, N.H.; Michael Schuster, Norwood, and Thomas Hogan, Worcester, both of Mass., assignors to Apollo Computer, Inc., Chelmsford, Mass.

Filed Oct. 28, 1988, Ser. No. 263,714
Int. Cl.[5] H03L *7/06, 7/07*
U.S. Cl. 331—2 **9 Claims**



1. Apparatus for generation of a plurality of synchronized clock signals on a computer system circuit board from a reference clock signal comprising:

means for receiving a reference clock signal;

means for providing a clock signal whose frequency may be varied in response to a control signal;

means, receiving said clock signal, for providing a plurality of clock output signals having a selected phase relationship therebetween and having a delay from said reference clock signal;

phase-locked loop means receiving said reference clock signal and a selected one of said plurality of clock output signals, for providing a control signal to said clock signal providing means, for varying the frequency of said plurality of clock output signals, to maintain a phase relationship between said plurality of clock output signals and said reference clock signal and to compensate for said delay;

frequency multiplier means, receiving said clock signal, for providing an output signal at a frequency being a multiple of said clock signal, and comprising plural clock pulses each having a specified duty cycle relative to said clock signal; and

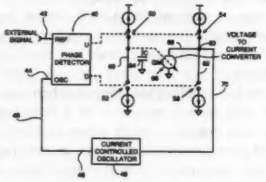
duty cycle control means for controlling the duty cycle of each of said plural clock pulses.

5,008,637

FULLY INTEGRATED CHARGE PUMP PHASE LOCKED LOOP

Daniel L. Ray, Fair Oaks, Calif., assignor to Level One Communications, Inc., Folsom, Calif.

Filed Nov. 15, 1989, Ser. No. 437,724
Int. Cl.[5] H03L 7/093
U.S. Cl. 331—8 **10 Claims**



1. In a phase locked loop circuit including a phase detector having a first input lead for receiving a reference signal and a second input lead connected to the output lead of an oscillator, apparatus for varying the output signal on the output lead of the oscillator comprising:

normally non-conducting first and second switch means providing conductance therethrough in response to a lag signal from the phase detector;

normally non-conducting third and fourth switch means providing conductance therethrough in response to a lead signal from the phase detector;

a first conductor connecting the first and third switch means;

a second conductor connecting the second and fourth switch means;

a first current source means connected to the first switch means, such that closing of the first switch means provides connection between the first current source means and first conductor;

a first current sink means connected to the third switch means, such that closing of the third switch means provides connection between the first current sink means and the first conductor;

second current source means connected to the second switch means, such that closing of the second switch means provides connection between the second current source means and the second conductor;

second current sink means connected to the fourth switch means such that closing of the fourth switch means provides connection between the second current sink means and the second conductor;

a capacitor having a terminal connected to the first conductor;

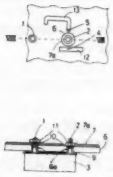
a voltage to current converter operatively connected with the capacitor, the second conductor and the input lead of the oscillator so that upon the first switch means providing conductance in response to a lag signal, current flows into the capacitor from the first current source means and charge is built on the capacitor to increase the voltage thereacross to in turn vary the signal to the oscillator to in turn vary the output signal of the oscillator, with the oscillator output signal further being varied by the second switch means conducting current via the second current source means in response to a lag signal, and upon the third switch means conducting in response to a lead signal, charge flows from the capacitor via the first current sink means to decrease the voltage thereacross to in turn vary the signal to the oscillator to in turn vary the output signal of the oscillator, with the oscillator output signal further being varied by the fourth switch means providing conductance through the second current sink means in response to a lead signal.

5,008,638

INSTALLATION STRUCTURE OF A MICROWAVE OSCILLATION CIRCUIT UNIT

Makio Nakamura, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 7, 1989, Ser. No. 362,506
Claims priority, application Japan, Jun. 8, 1988, 63-76160[U]
Int. Cl.[5] H03B 1/00
U.S. Cl. 331—68 **1 Claim**



1. In an installation structure for installing a microwave oscillation circuit unit on one surface of a chassis base having a circuit substrate on its other surface, said unit having at least two screws, a power supply terminal and an output terminal on its one surface confronting the chassis base when installed on the chassis base, the improvement comprising

a first nut to be threaded on one of the screws which is positioned adjacent to the power supply terminal and the output terminal so that torque caused by tightening said first nut to said one of the screws acts upon the chassis base and said first nut is clear from the circuit substrate; and

a second nut to be threaded on the other of the screws which is positioned apart from the power supply terminal and the output terminal so that torque caused by tightening said second nut to said the other of the screws acts upon both the chassis base and the circuit substrate.

5,008,639

COUPLER CIRCUIT

Anthony M. Pavio, 1813 Edgewater Dr., Plano, Tex. 75075

Filed Sep. 27, 1989, Ser. No. 413,558
Int. Cl.[5] H01P 5/18
U.S. Cl. 333—116 **28 Claims**

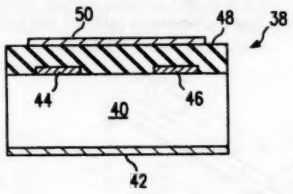
1. A coupler circuit, comprising:

a first conductor adjacent and substantially parallel to a substrate;

a second conductor adjacent and substantially parallel to said substrate and coplanar with said first conductor; and

a conductive layer substantially parallel with said first and second conductors such that a current is induced in said second conductor responsive to a current generated in said first conductor and coupling of said second conductor to said first conductor by said conductive layer; and

a dielectric layer between said conductive layer and said first and second conductors, wherein said dielectric layer is



selected from the group consisting of nitride, polyamide and silicon-glass.

5,008,640

DIELECTRIC-LOADED CAVITY RESONATOR

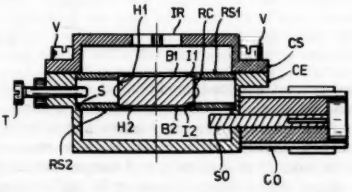
Luciano Accatino, Rosta, and Giorgio Bertin, Etrouble, both of Italy, assignors to CSELT - Centro studi e Laboratori Telecommunicazioni S.P.A., Turin, Italy

Filed Jul. 17, 1989, Ser. No. 380,978

Claims priority, application Italy, Jul. 21, 1988, 67687 A/88

Int. Cl.[5] H01P *7/06, 7/10*

U.S. Cl. 333—219.1 **3 Claims**



1. A dielectric-loaded cavity resonator, comprising:

a generally closed metallic housing defining a cylindrical cavity and formed with two spaced-apart steps on opposite sides of an increased-diameter portion of said cavity spaced from opposite ends of said housing; and

a dielectric assembly received in said housing and comprising:

a pair of dielectric plates each seated in one of said steps and formed with a centering indentation opening toward the other of said plates, and

a dielectric cylinder received between said plates and having opposite bases each received in a respective one of said indentations, whereby said assembly formed by said plates and said cylinder is held in a fixed position in said cavity and is spaced from said ends by said steps.

5,008,641

POLARIZED ARMATURE CONTACT RELAY

Helmut Schedele, Diessen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 31, 1990, Ser. No. 531,839

Claims priority, application Fed. Rep. of Germany, May 31, 1989, 8906678[U]

Int. Cl.[5] H01H *51/22*

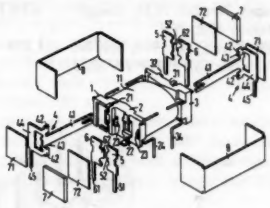
U.S. Cl. 335—80 **6 Claims**

1. A polarized armature contact relay, comprising:

a hollow coil body having first and second end flanges; a winding about said coil body;

first and second tongue armatures extending within said hollow coil body in opposite directions and parallel to one another, said tongue armatures each having a terminal end mounted in a corresponding one of said first and second end flanges and a free end;

first and second pairs of pole pieces mounted on corresponding ones of said first and second end flanges adjacent said terminal ends of corresponding ones of said first and second tongue armatures, said pole pieces each having a front face and said pole pieces being mounted next to one another in pairs with said front faces facing each other to enclose said free ends of corresponding ones of said second and first tongue armatures;



first and second flat four-pole permanent magnets mounted on corresponding pairs of said first and second pairs of pole pieces, said permanent magnets having two opposite polarization directions parallel to the axis of said coil member, said permanent magnets each being mounted with oppositely magnetized poles coupled to respective ones of said pole pieces in each of said first and second pair of pole pieces; and

first and second flux plates coupled between outside poles of corresponding ones of said first and second magnets and said free ends of said second and first tongue armatures.

5,008,643

IGNITION COIL HAVING A DIVIDED HIGH TENSION WINDING, IN PARTICULAR FOR INTERNAL COMBUSTION ENGINES

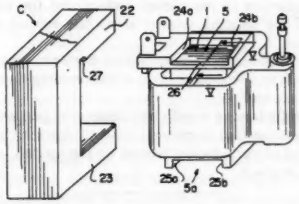
Pierre Heritier-Best, Orbeil, France, assignor to Valeo Electronique, Issy-les-Moulineaux, France

Filed Dec. 21, 1989, Ser. No. 454,150

Claims priority, application France, Dec. 23, 1988, 88 17053

Int. Cl.[5] H01F *15/02, 27/30*

U.S. Cl. 336—96 **2 Claims**



1. An ignition coil having primary and secondary winding assemblies for automotive internal combustion engines, said secondary winding assembly comprising:

an insulating assembly body having a central axis and a plurality of walls, said plurality of walls defining a plurality of winding compartments alternating with insulating compartments in the direction of said central axis;

a divided high tension winding comprising a wire having a plurality of winding sections distributed in respective said winding compartments, wherein said walls have connecting slots extending therethrough such that said winding sections are connected to each other in series by said wire passing through said connecting slots, and wherein said connecting slots are successively offset with respect to each other;

said secondary winding assembly having an adhesive varnish able to polymerize on itself after exposure to ultraviolet radiation impregnated therein, said adhesive varnish comprising a composition of epoxide resin and acrylic ester, and said secondary sub-assembly further being encapsulated with an insulating envelope of thermoplastic material.

5,008,644

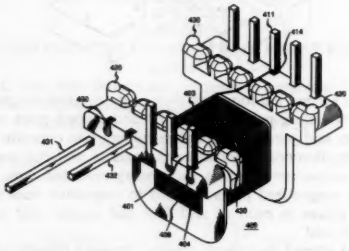
TERMINAL ASSEMBLY FOR LINEAR MAGNETIC COMPONENT BOBBIN

Robert C. Cooper, Newton, N.H., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 31, 1989, Ser. No. 401,275

Int. Cl.[5] H01F *15/10, 27/30*

U.S. Cl. 336—192 **4 Claims**



1. An assembly for a magnetic component comprising:

a bobbin structure including:

mounting supports having a plurality of supporting standoffs for resting on a planar surface on which the bobbin structure is to be mounted

a winding wound about a portion of the bobbin structure with a winding axis parallel to the planar surface and having at least one wire termination lead connected to the winding,

at least a terminal integral to the bobbin being included in the mounting support of the bobbin structure having an L shape and included in a passageway in the mounting support of the bobbin structure and having a longitudinal axis parallel to the planar surface with a first leg of the L shaped terminal substantially parallel to the planar surface and a second leg of the L shaped terminal substantially perpendicular to the planar surface and the termination end of the winding wound about the second leg of the terminal,

the wire termination being passed between two adjacent standoffs to a wound portion of the winding on the bobbin structure, and

the standoffs having a sufficient dimension perpendicular to the planar surface to prevent contact between the termination end of the winding wound on the second leg and the planar surface.

5,008,645

CIRCUIT BREAKER WITH TAMPER INDICATING CALIBRATION MEANS

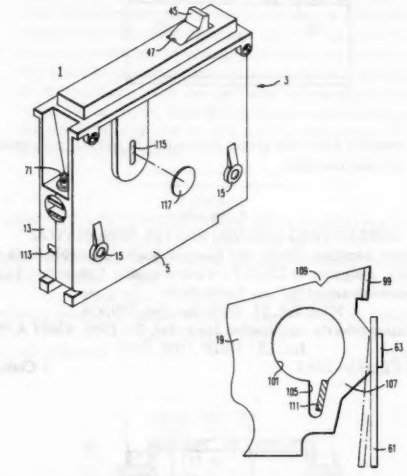
Stephen A. Mrenna, Brighton Township, Beaver County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 30, 1990, Ser. No. 559,861

Int. Cl.[5] H01H *71/06, 75/10, 77/04*

U.S. Cl. 337—70 **10 Claims**

1. A circuit breaker comprising an electrically insulating housing including a base defining a cavity and a cover for enclosing said cavity, a circuit breaker assembly within the cavity in said housing and comprising electrical contacts movable between open and closed positions, an operating mechanism including a cradle latchable in a latched position and operative when unlatched to automatically move said electrical contacts to said open position, a trip mechanism including an elongated bimetal which latches said cradle in the latched position and which flexes to unlatch said cradle in response to predetermined persistent current overload conditions, and a calibration opening in said housing through which a tool is insertable to adjust the bimetal to calibrate said predetermined



persistent current overload conditions at which said bimetal unlatches said cradle to move said electrical contacts to the open position after said circuit breaker assembly has been installed in said cavity and the cavity has been enclosed with said cover secured to said base, and tamper indicating seal means sealing said calibration opening in said housing from subsequent access.

5,008,646

NON-LINEAR VOLTAGE-DEPENDENT RESISTOR

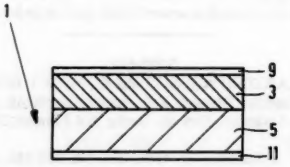
Detlev Hennings, Aachen; Bernd F. W. Hoffmann, Rheinstetten, and Markus Nutto, Endingen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 26, 1989, Ser. No. 371,866

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1988, 3823698

Int. Cl.[5] H01C *7/10*

U.S. Cl. 338—20 **19 Claims**



1. A non-linear voltage-dependent resistor comprising a ceramic sintered body of at least one laminated structure of a layer (3) of resistance material consisting essentially of zinc oxide doped with at least one alkaline earth metal, at least one rare earth metal and at least one metal of the iron group consisting of aluminum, gallium and indium provided on a carrier layer (5) consisting essentially of zinc oxide and having a higher electric conductivity than the layer (3) of resistance material

5,008,647

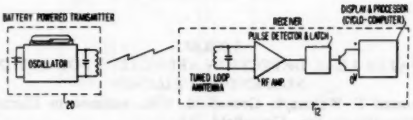
WIRELESS BICYCLE WHEEL MONITOR SYSTEM

Chris Brunt, Topanga, and Don C. Carner, Jr., Oxnard, both of Calif., assignors to Orleander S.A., Lugano-Cassarate, Switzerland

Continuation-in-part of Ser. No. 306,621, Feb. 6, 1989, abandoned. This application Oct. 25, 1989, Ser. No. 430,093

Int. Cl.[5] B62J *3/00;* G01P *3/66*

U.S. Cl. 340—432 20 Claims



13. In a low-power wireless data display system for monitoring rotation of an object relative to a frame, said system having a transmitter unit including sensor means for monitoring rotation of the object and generating a corresponding signal, and a transmitter antenna for transmitting the signal, and a receiver unit remote from the transmitter unit including a receiver antenna for receiving the transmitted signal, processing means for processing the received signal into monitoring data, and display means for displaying the monitoring data,

the improvement wherein said transmitter and receiver units are mounted to the frame, and said transmitter and receiver antennas have a longitudinal axis of symmetry for signal propagation in a longitudinal direction, and means for orienting the axes of symmetry of said antennas in alignment with each other, said orienting means including at least one of said transmitter and receiver units having a mounting portion which is mounted to a part of the frame and provided with a pivotable part carrying the antenna for said unit for allowing it to be pivoted to a position in which its longitudinal axis is aimed in alignment with the longitudinal axis of the antenna of the other unit, whereby efficient transmission and reception of the signal is obtained and interference with or from an adjacent, similar system is avoided.

5,008,648

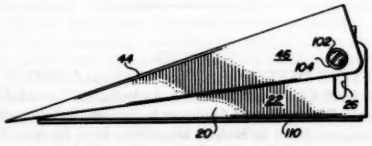
ELECTRONIC DOOR WEDGE ALARM

Timothy D. Conemac, 9533 Gierson Ave., Chatsworth, Calif. 91311

Filed Sep. 14, 1989, Ser. No. 407,502

Int. Cl.[5] G08B *13/08*

U.S. Cl. 340—546 27 Claims



1. An alarm device for use with a hinged, inwardly-opening door, comprising:

a bottom chassis member comprising a first rectangular segment, said bottom chassis member having a front end including a first side of said first rectangular segment and a back end including a second side of said first rectangular segment, said second side of said first rectangular segment being opposite said first side of said first rectangular segment;

a top chassis member comprising a second rectangular segment, said top chassis member having a front end including a first side of said second rectangular segment and a back end including a second side of said second rectangular segment, said second side of said second rectangular segment being opposite said first side of said second rectangular segment;

means for mounting said top chassis member on said bottom chassis member to form a wedge-shaped assembly with the thin edge of said wedge-shaped assembly defined by said first sides of said first and second rectangular segments and the thick edge of said wedge-shaped assembly being defined by said second sides of said first and second rectangular segments, said second sides of said rectangular segments being relatively moveable toward and away from each other;

means for biasing said second sides of said first and second rectangular segments away from each other;

switch means for triggering said alarm device when said second ends of said first and second rectangular segments move toward each other;

an audio transducer; and

an alarm circuit electrically connected to said switch means and to said audio transducer, said alarm circuit causing said audio transducer to emit an alarm signal whenever said switch means operates to trigger said alarm device.

5,008,649

MAGNETIC SECURITY SYSTEM AGAINST THEFT AND BURGLARY AND METALLIC SENSOR ELEMENT SUITABLE THEREFOR

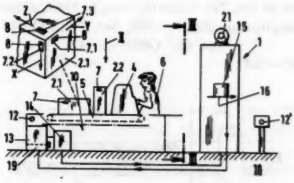
Erhard Klein, Butjadingen, Fed. Rep. of Germany, assignor to Karl Harms Handels-GmbH & Co. KG, Jever, Fed. Rep. of Germany

Continuation of Ser. No. 229,951, Aug. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 172,888, Mar. 25, 1988, abandoned. This application Feb. 9, 1989, Ser. No. 308,227

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1987, 3741780

Int. Cl.[5] G08B *13/14;* G01R *33/00*

U.S. Cl. 340—572 43 Claims



1. An apparatus for securing an object located in a room having at least one room outlet against theft, comprising:

at least one field coil surrounding each room outlet which generates a magnetic field, each of said at least one field coil having a horizontal axis, and a height and breadth which are suitable for a person to walk through the field coil in the direction of the horizontal axis;

at least one magnetically-activated sensor metal element fixed to the object which, when brought into an active state by a special treatment, generates a first signal when the sensor metal element is brought within a distance of one of said at least one field coil so as to exceed a field strength limit value

means for detecting the first signal from the sensor metal element;

an alarm which is triggered when said detecting means detects the first signal; and

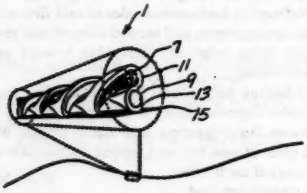
said first signal being distinguishable by the detecting means from signals generated by other metallic objects when under magnetic excitation.

5,008,650

LEAK DAMAGE PREVENTION SYSTEM

Dane A. Hoiberg, 402 Fallingstar, Irvine, Calif. 92714

Filed Sep. 21, 1989, Ser. No. 410,641
Int. Cl.[5] G08B 21/00
U.S. Cl. 340—604 3 Claims



1. A liquid detection system comprising:

means for detecting the presence of a liquid on a normally dry surface area, the detecting means including a helically wound elongated sensor comprising at least two conductors each being partially surrounded by a body of electrically insulating material, so that an elongated exposed portion having a continuous extent along the length of the sensor is formed on each conductor and the exposed portions are exposed to the environment continuously in alternating fashion while remaining electrically isolated from each other by protruding ridges of insulation along the length of the sensor, whereby the presence of liquid on the surface area to which the conductors are exposed can bridge the exposed portions of a pair of conductors independent of orientation of the sensor; and

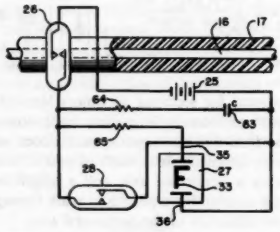
electrical circuit means operatively connected to the sensor for detecting electrical resistance changes in the sensor in response to the liquid bridging the exposed portions of the conductors of the sensor.

5,008,651

BATTERY-POWERED FAULT INDICATOR

Edmund O. Schweitzer, Jr., 2433 Center St., Northbrook, Ill. 60062

Continuation of Ser. No. 433,674, Nov. 8, 1989, abandoned. This application Jul. 9, 1990, Ser. No. 551,043
Int. Cl.[5] G08B 21/00
U.S. Cl. 340—664 30 Claims



1. A fault indicator operable from a battery for indicating the occurrence of a fault current in a monitored electrical conductor, comprising:

a housing;

status indicating means within said housing comprising a high impedance display device having at least a pair of display electrodes disposed in operative association with a layer of voltage-responsive light controlling material, the display device providing on the exterior of said housing a first display condition in the absence of an actuating signal applied to said display electrodes, and a second display condition in the presence of an actuating signal applied to said display electrodes;

charge storage means;

switch means rendered conductive upon the occurrence of a fault current in the monitored conductor for momentarily connecting the battery to said charge storage means to develop a charge therein following the fault current; and

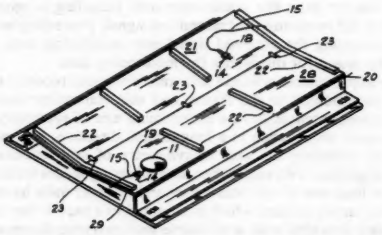
circuit means for connecting said charge storage means to said display electrodes whereby said high impedance display device is caused to display said second condition following the fault current.

5,008,652

WATER LEAK DETECTION APPARATUS FOR USE IN SUSPENDED CEILINGS

Leonard T. Woloszyk, Greenfield, Wis., assignor to Electro-Consultants, Inc., Greenfield, Wis.

Filed May 30, 1990, Ser. No. 530,385
Int. Cl.[5] G08B 21/00
U.S. Cl. 340—605 4 Claims



1. A device, on the top side of a suspended ceiling panel for detecting leakage of liquid on to and through a ceiling comprising:

at least one liquid concentrating tray having surfaces sloping to form a narrow trough;

electric conductor means for conducting electricity, sensor terminal; means in said troughs to be contacted by said liquid, warning means for warning of a leak in said ceiling, and current supply means in a circuit to actuate said warning means when said liquid contacts said sensor terminal means;

said sensor terminal means being connected in parallel by said electric conductor means to said current supply means and said warning means in said electric circuit.

5,008,653

FLUID DETECTOR WITH OVERFILL PROBE

Roy E. Kidd, Clayton; Raymond J. Andrejasich, Carmel; Hilary Michel, Plainfield, and Laurence S. Slocum, Indianapolis, all of Ind., assignors to Emhart Industries, Inc., Towson, Md.

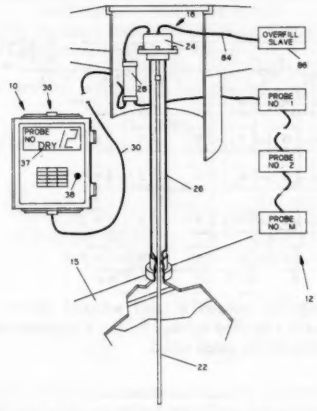
Filed Dec. 22, 1989, Ser. No. 455,577
Int. Cl.[5] G08B 21/00
U.S. Cl. 340—620 8 Claims

1. An apparatus for detecting the presence of fluids comprising:

a plurality of probes for detecting the fluid state of their environment, said probes including an overfill probe for detecting the approach of the overfill condition in a tank of liquid;

monitor means for checking the status of said probes, said monitor means including: timing means for clocking a predetermined time period; and overfill checking means responsive to said timing means for checking said overfill probe at lest once during each predetermined time period,

said predetermined time period being shorter than the time to check all of said probes; and



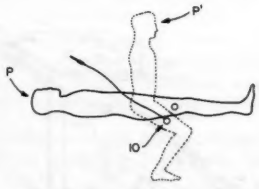
means for electrically connecting said monitor means and said probes.

5,008,654

PATIENT AMBULATION MOTION DETECTOR

James J. Callaway, 1577 Moran Rd., Franklin, Tenn. 37064

Filed Nov. 7, 1989, Ser. No. 432,867
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—686 **4 Claims**



1. A patient's ambulation motion detector comprising:

motion sensor means for sensing movement of a patient's body from a supine posture to a posture indicative of impending ambulation and for providing an electrical signal in accordance with said sensed movement;

attachment means for attaching the motion sensor means to a lateral and substantially vertical surface of a supine patient's body; and

detachment sensor means for sensing detachment of the detector from the patient's body and for providing an electrical signal in accordance with said sensed detachment;

wherein the detachment sensor means comprises:

a planar circuit board provided with respective first and second conductor lands thereon and having an aperture provided centrally therethrough;

a conductive spring contact member having a base end conductively mounted to said first conductor land on said circuit board, a medial bridge portion extending from the base end and spaced above and at a higher level relative the circuit board than the base end, and a free contact end opposite the base end and overlying said second conductor land on said circuit board and being elastically urged into conductive contact therewith; and

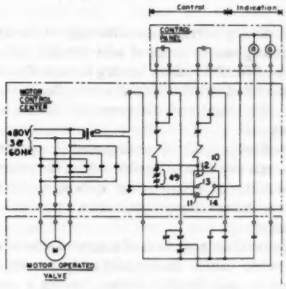
a plunger having a shaft portion passing through the aperture in the circuit board, one end of said shaft portion abutting an underside of the medial bridge portion of the conductive spring contact member, said plunger being movable against said conductive spring member for urging the free contact end of said conductive spring contact member out of electrical contact with said second conductor land on said circuit board.

5,008,655

VISUAL ALARM DEVICE INTERCONNECTABLE TO EXISTING MONITORING CIRCUITRY

Robert A. Schlesinger, 1618 Vinewood La., NE., Cedar Rapids, Iowa 52402; Kimuel L. Hill, Rte. 2 - Box 200, Clinton, Tenn. 37716; Hamid S. Ali, 4946 Kebbe Dr., Sterling Heights, Mich. 48077, and Mark E. Watson, 2209 Kline Ave., Nashville, Tenn. 37211

Filed Nov. 20, 1989, Ser. No. 438,083
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—691 **6 Claims**



1. A visual alarm device readily interconnectable within a monitored circuit, said monitored circuit including

a motor operated device;

a motor control center for controlling said motor operated device; and

visual indicating devices for indicating the position of said motor operated device said visual alarm device comprising:

a condition-detecting circuit connected to said monitored circuit to detect a change of condition in said monitored circuit;

an oscillator responsive to said condition-detecting circuit, said oscillator providing a regular cyclic signal upon receiving a signal from said condition-detecting circuit; and

a controller disposed in series with said visual indicating devices within said monitored circuit and responsive to said oscillator, said controller allowing current to cyclically flow between pole terminals of said visual indicating devices upon receiving said regular cyclic signal from said oscillator;

said visual alarm device thereby giving a distinct visual indication upon a change of condition in said monitored circuit using existing wiring between said motor control and said visual indicating devices.

5,008,656

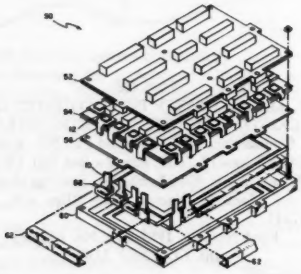
FLEXIBLE CABLE ASSEMBLY

Frank J. Cheriff, Holliston; Joseph J. Kirk; Arnold M. Pulver, both of Sudbury, and Walter N. Cox, Westboro, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 325,062, Mar. 14, 1989, abandoned, which is a continuation of Ser. No. 173,002, Mar. 30, 1988, abandoned, which is a continuation of Ser. No. 97,381, Sep. 16, 1987, abandoned, which is a continuation of Ser. No. 684,415, Dec. 20, 1984, abandoned. This application Feb. 20, 1990, Ser. No. 483,345

Int. Cl.[5] G09G *3/00*

U.S. Cl. 340—718 **6 Claims**



1. A display assembly comprising:

display element means for displaying a plurality of characters;

a plurality of chip carrier means having driver circuit means for selecting one or more of said plurality of characters;

a plurality of flexible cables having formed therein a plurality of insulated strip conductors, said flexible cables being readily connected and disconnected within said display assembly;

prearranged solder pad means disposed on a portion of a first side of each one of said flexible cables for attaching one of said plurality of chip carrier means, a portion of said solder pad means being coupled to a portion of said strip conductors;

means, disposed on a portion of a second side of each one of said flexible cables under said chip carrier means and attached to said flexible cables, having a coefficient of expansion approximately matched to a coefficient of expansion of said chip carrier means, for restraining said flexible cables during temperature variations to accommodate said chip carrier means expansion, said disposed means providing support to each one of said flexible cables, further restraining said flexible cables to prevent fatiguing at said solder pad means of said chip carrier means and removing heat from said chip carrier means; and

means on a first end and second end of each one of said flexible cables and coupled to portions of said strip conductors for attaching said first end within said display assembly and said second end to said display element, said attaching means facilitating disconnection of each one of said flexible cables for repair.

5,008,657

SELF ADJUSTING MATRIX DISPLAY

Charles M Hanson, Richardson, Tex., and Virginia N. MacDonald, Lansdale, Pa., assignors to Varo, Inc., Garland, Tex.

Filed Jan. 31, 1989, Ser. No. 304,166

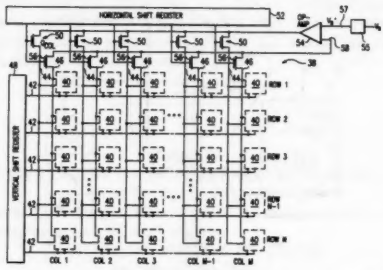
Int. Cl.[5] G09G *3/20*

U.S. Cl. 340—766 **18 Claims**

15. A method of displaying a visual representation of a video signal on a plurality of individually addressable picture elements, comprising the steps of:

applying a voltage dependent upon the video signal to a selected picture element;

sensing the voltage at said selected picture element; and



adjusting the voltage at said selected picture element towards a desired voltage having a predetermined relationship to the video signal.

5,008,658

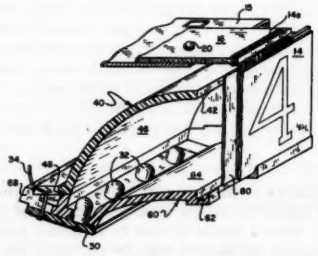
DOMED LIGHT HOUSING FOR BACK-LIT LCD DISPLAY

Thomas Russay, Park Ridge, and Carl W. Stacy, Elmwood Park, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 9, 1986, Ser. No. 939,668

Int. Cl.[5] G09G *3/36*

U.S. Cl. 340—784 **15 Claims**



1. A video display arrangement comprising:

a generally planar LCD display having an aft surface, a forward viewed surface, and a plurality of peripheral edges;

at least one LED; and

a hollow housing having an empty aperture extending therethrough and including an open forward section whereon is positioned said LCD display, an aft section for receiving said at least one LED, and a curvilinear intermediate section coupling said forward section to said aft section, wherein said at least one LED is positioned aft of and beyond a peripheral edge of said LDC display in an off-set manner and in non-alignment therewith such that light emitted by said at least one LED is transmitted through said empty aperture and is reflected by the curvilinear intermediate section of said housing onto the aft surface of said LCD display in providing backlighting therefor, wherein said housing includes first and second facing lateral panels and facing concave and convex panels coupled at respective adjacent ends to said first and second facing lateral panels so as to define said empty aperture.

5,008,659

PICTURE DISPLAY DEVICE INCLUDING A WAVEFORM GENERATOR/AND A COMPENSATION CIRCUIT, AND INTEGRATED CIRCUIT INCORPORATING THE SAME

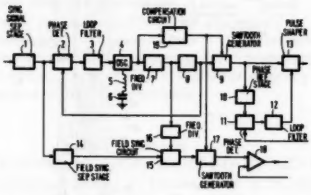
Paulus J. M. Hovens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 24, 1989, Ser. No. 301,574

Claims priority, application Netherlands, Feb. 8, 1988, 8800286

Int. Cl.[5] G09G 3/00

U.S. Cl. 340—812 8 Claims



1. A picture display device including a first generator circuit for generating a first periodical waveform for addressing picture elements on a picture display screen, said circuit comprising a first time-determining network including a first capacitor, characterized in that the picture display device is provided with a compensation circuit for compensating for inaccuracies in the values of components in said first generator circuit, said compensation circuit including a second generator circuit for generating a second periodical waveform and a source for applying a compensation current to the first capacitor in dependence upon the second periodical waveform, the second generator circuit comprising a second time-determining network with a second capacitor, and the first and second capacitors being integrated in one semiconductor body.

5,008,660

ELECTROMAGNETIC DETECTION SYSTEM

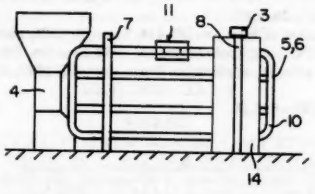
Hendrik J. de Jong, Groenlo, Netherlands, assignor to N.V. Nederlandsche Apparatenfabriek Nedap, De Groenlo, Netherlands

Filed Mar. 3, 1989, Ser. No. 318,303

Claims priority, application Netherlands, Mar. 4, 1988, 8800546

Int. Cl.[5] H04B 5/00; A01K 5/00

U.S. Cl. 340—825.54 4 Claims



1. An electromagnetic detection system comprising a transmitter-receiver apparatus and at least one antenna element, said transmitter-receiver apparatus being coupled to said at least one antenna element to form an electromagnetic interrogation field in an interrogation zone, structural confining means for defining the range and area of said interrogation zone and for physically confining mobile entities to be interrogated in said interrogation zone, and a plurality of responders attached to each of said mobile entities and capable of generating a detectable signal under the influence of said interrogation field, said at least one antenna element being formed as an integral part of said structural confining means, said structural confining means comprising an automatic feeding station for animals comprising a food dispenser, two side railings, and two bows for reinforcing said side railings and extending over said railings and said interrogation zone, said at least one antenna element being integrally formed with at least one of said bows.

5,008,661

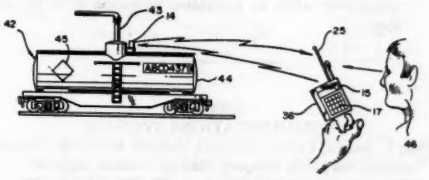
ELECTRONIC REMOTE CHEMICAL IDENTIFICATION SYSTEM

Phani K. Raj, 2 Kitson Park Dr., Lexington, Mass. 02173

Continuation-in-part of Ser. No. 780,938, Sep. 27, 1985, abandoned. This application Jan. 4, 1989, Ser. No. 293,505

Int. Cl.[5] H04Q 7/00, 3/00

U.S. Cl. 340—825.54 11 Claims



1. An electronic remote chemical identification system consisting of a transponder unit for mounting on a container; memory and processor units associated with said transponder unit; said memory unit having both permanent and programmable sections, said permanent section containing a unique transponder identification number; and encoder unit for programming and reprogramming said programmable memory section in said transponder with information relating to the chemical being transported and other data; and an interrogator unit for interrogating said transponder unit to cause said processor units in said transponder to compare the information content of said interrogation with both said data in said permanent memory section and said chemical specific data in said programmable memory section of said transponder and to compile and encode a proper response to said interrogation only if said proper response is appropriate, and to transmit said response compiled from said data in said memories, said interrogator unit being capable of simultaneous communication with a plurality of transponders.

5,008,662

REMOTE SUPERVISORY AND CONTROLLING MACHINE

Toshiaki Tokizane; Yoshiharu Ito; Osamu Yamada; Toshiyuki Masuda, and Mitsunobu Kuroda, all of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 379,407, Jul. 13, 1989, abandoned, which is a division of Ser. No. 218,176, Jul. 13, 1988, abandoned. This application Aug. 21, 1990, Ser. No. 569,726

Claims priority, application Japan, Oct. 27, 1987, 62-271061; Nov. 26, 1987, 62-298738

Int. Cl.[5] G05B 23/02

U.S. Cl. 340—825.06 5 Claims

1. A remote supervisory and controlling system comprising:

a central control unit;

a plurality of terminal units, said plurality of terminal units being connected to said central control unit through a two-wire signal line and said central control unit sends out a transmission signal including an address data signal for calling each of said terminal units, a control data signal for controlling a load associated with each of said terminal units, and a return wait signal for setting a period of returning a monitor data signal from each of said terminal units to perform time-divisional multiplex transmission of monitor data and control data between said central control unit and each of said terminal units, in which said

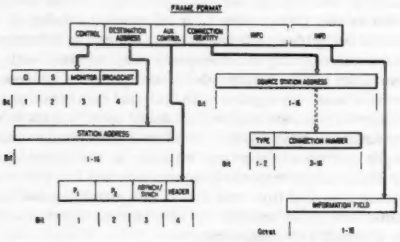
system further comprises a wireless relay terminal unit for returning data received through an optical wireless receiver from an optical wireless transmitter to said central control unit through time-divisional multiplex transmission, said wireless relay terminal unit being coupled to said central control unit through said two-wire signal line and said transmitters each having an address setting section for setting the address to which said data is to be transmitted, and wherein said receiver is coupled to said wireless relay terminal unit via an exclusive link, said wireless relay terminal unit responding to said signal received from said receiver only when a systematic operation is to be performed, and wherein said system further comprises an individual receiver having a load associated therewith, said individual receiver responding to said signal from said transmitter when an individual operation is to be performed.

5,008,663

COMMUNICATIONS SYSTEMS

John L. Adams, Leiston, England, assignor to British Telecommunications public company limited, London, England

Continuation-in-part of Ser. No. 753,993, Jul. 11, 1985, abandoned. This application Jul. 22, 1987, Ser. No. 76,276
Claims priority, application United Kingdom, Jul. 24, 1986, 8618118
Int. Cl.[5] H04Q *1/00*; H04J *3/02*
U.S. Cl. 340—825.5 **16 Claims**



1. A method of controlling a communications network comprising a plurality of stations which can communicate via a closed communication loop; said method including:

providing information in digital form for transmission from one station to another in message blocks which circulate around the loop, each message block being provided as a first group of control bits and a second group of data bits,

controlling each of said plurality of stations having data to transmit to assume an active state in which it inserts digitally encoded information into empty message blocks for transmission to a destination station via the loop,

causing any of said stations in an active state, if it has inserted information into d message blocks, where d is an integer greater than zero and is variable, to enter a state in which it cannot gain access to empty blocks for the transmission of information until it is reset,

controlling any receiving station after receiving data from a message block to set the control bits of said message block to indicate a further allocation request;

controlling the receiving station setting the control bits of said block to further modify said control bits upon the station recognizing that said block has traveled unmodified once around the loop, said control bits being modified to indicate a reset;

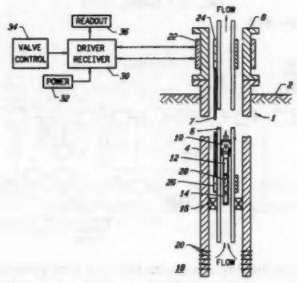
said resets being issued to each of said stations so that no station is in a preferential position with regard to the rate of reception of resets.

5,008,664

APPARATUS FOR INDUCTIVELY COUPLING SIGNALS BETWEEN A DOWNHOLE SENSOR AND THE SURFACE

Henry S. More, Los Altos; Edward C. Fraser, Cupertino, and Lawrence R. Bulduc, Cottonwood, all of Calif., assignors to Quantum Solutions, Inc., Santa Clara, Calif.

Filed Jan. 23, 1990, Ser. No. 468,591
Int. Cl.[5] G01V *1/00*
U.S. Cl. 340—854 **33 Claims**



1. An apparatus for transmitting signals between surface equipment and downhole equipment, including:

a set of inductive coupling coils, including a first downhole coil and a second downhole coil separated by a pressure barrier from the first downhole coil, for inductively coupling an AC drive signal from the surface equipment to the downhole equipment; wherein the downhole equipment includes:

a sensor, for generating a data signal having a frequency indicative of a measured quantity;

a rectifier for receiving the AC drive signal from the first downhole coil and generating a rectified signal from the received AC signal; and

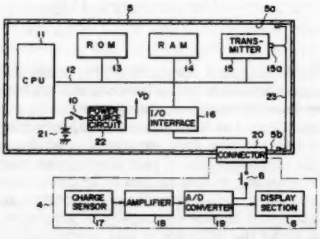
a modulator connected between the first downhole coil and the sensor, for receiving the data signal and impressing on the first downhole coil a modulation indicative of the data signal frequency.

5,008,665

MEASURING DEVICE HAVING TRANSMITTER

Yoshio Wakatsuki; Toshiharu Okuyama; Hajime Takeuchi; Misao Shimizu, and Giichiro Shimizu, all of Tokyo, Japan, assignors to Man Design Co. Ltd., Tokyo, Japan

PCT No. PCT/JP88/00377, § 371 Date Dec. 14, 1988, § 102(e) Date Dec. 14, 1988, PCT Pub. No. WO88/08184, PCT Pub. Date Oct. 20, 1988
Continuation of Ser. No. 290,414, Dec. 14, 1988, abandoned.
This PCT application Apr. 15, 1988, Ser. No. 569,534
Claims priority, application Japan, Apr. 16, 1987, 62-56703
Int. Cl.[5] G08C *19/00*
U.S. Cl. 340—870.26 **2 Claims**



1. A measuring device having a transmitter, comprising:

a measuring device section, including a measurement data

display section, for converting measurement data into a digital value and displaying the digital value;

a data processing unit for arranging the measurement data output from said measuring device section in a data frame having a predetermined format and outputting the measurement data as a transmission data string; and

a FSK transmitter for FSK modulating and transmitting the transmission data string, which is output from said data processing unit, by radio transmission, the improvement comprising:

a casing arranged on said measuring device section back to back with said measurement data display section of said measuring device section, housing said data processing unit and said FSK transmitter; and

a conductor portion adapted to be grasped by an operator, said portion provided on at least a predetermined area of an outer rear wall of said casing, for connecting the body of the operator to said FSK transmitter whereby the body serves as a transmitting antenna.

5,008,666

TRAFFIC MEASUREMENT EQUIPMENT

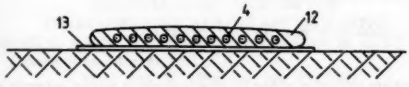
Franz J. Gebert; Johannes P. Theron; Ralf D. H. Gebert, and Rudiger H. Gebert, all of P.O. Box 14183, Lyttleton, Transvaal, South Africa

Continuation-in-part of Ser. No. 176,257, Mar. 31, 1988, abandoned. This application Oct. 12, 1989, Ser. No. 420,762

Claims priority, application South Africa, Apr. 2, 1987, 87/2386

Int. Cl.[5] G08G *1/02*

U.S. Cl. 340—936 **19 Claims**



1. In a traffic data acquisition method comprising laying an electrically conductive cable with at least two conductors separated by a material which has electrical properties selected from one or more of piezo-electric, tribo-electric, magneto-=and/or electro=strictive effects, connecting the conductors to an electronic processor comprising an amplifier, digitiser and micro-processor, detecting signals induced in the cable by passage of vehicle wheel(s) over the cable, and processing the signals, the improvements in that the processing of the signals comprises computing a total integrated spectral power of the signals, establishing an empirical relationship between speed and weight of other vehicle wheel(s) passing over the cable and the total spectral power for the cable, inputting the computed total spectral power and one of the speed or weight of the vehicle wheel(s) thereof into the empirical relationship and deriving the other one of the weight or speed of the latter vehicle wheel(s) from the empirical relationship.

5,008,667

SAFETY SYSTEM FOR BOATS IN DRY STORAGE

Larry R. Palmer, Rt. 2, P.O. Box 397-X1, Harriman, Tenn. 37748; Joseph M. Collins, Rt. 4, Box 561, Lenoir City, Tenn. 37771, and Gary M. Holloway, Rte. 2, Box 423A, Vonore, Tenn. 37885

Filed Mar. 26, 1990, Ser. No. 498,971

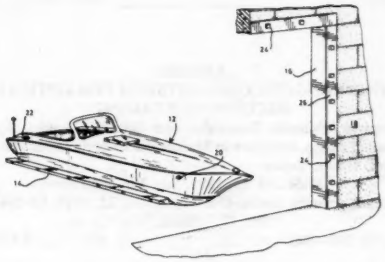
Int. Cl.[5] G08B *23/00*

U.S. Cl. 340—984 **11 Claims**

1. A safety system for use with boats stored within an enclosed building, which comprises:

a transmitting unit for attachment to said boats, said transmitting unit interposed between a battery system and an electrical distribution system of said boats, said transmitting unit including a disconnect switch means for selectively interrupting connection between said battery system and said electrical distribution system and further including at least one signal transmitting unit to generate an output signal when said battery system is connected to said electrical distribution system by said disconnect switch means; and

a receiving unit associated with said enclosed building, said receiving unit having at least one detector unit for receiving said output signal of said signal transmitting unit, said receiving unit further having a power supply means for said detector unit and an alarm means connected to said detector unit for generating an alarm signal whenever said detector unit detects said output signal from said signal transmitting unit.



5,008,668

METHOD AND APPARATUS FOR ENCODING AND DECODING DATA IN RESIDUE NUMBER SYSTEM

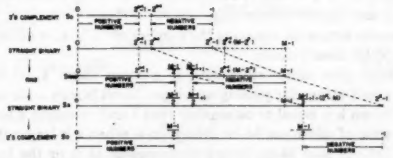
Jun Takayama, Tokyo; Takeshi Ninomiya, Kanagawa; Tadao Fujita, Kanagawa, and Yoshiaki Inaba, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 12, 1988, Ser. No. 256,732

Claims priority, application Japan, Oct. 12, 1987, 62-257025; Oct. 15, 1987, 62-260991

Int. Cl.[5] H03M *7/18*

U.S. Cl. 341—83 **5 Claims**



1. An encoder circuit for converting input data composed of binary codes into RNS data, comprising:

dividing means using fixed bits of a predetermined length for dividing said input data having the value S into upper bit data S_u and lower bit data having the value S_L in the relation

$$S=S_u\times 2^{\theta}+S_L$$

in which 2^{θ} is a weighted value;

a first ROM table circuit for weighing each of said upper and lower bit data and converting said upper and lower bit data into residue data for respective fixed RNS moduli, said residue data having a value R_i represented by the equation $R_i=(R_{ui}+R_{Li})$ MOD m_i, wherein R_{ui} is an upper bit residue data value R_{Li} is a lower bit residue data value of a modulus m_i;

a second ROM table circuit for converting an addition value of said residue data for each of said moduli into residue data of respective moduli and said addition value has a

residue data value D_i composed of the added values of lower bit residue data D_L and upper bit residue data D_u; and

means for outputting said residue data obtained from said second ROM table circuit as said residue data composing said RNS data.

5,008,669

ENCODING/DECODING SYSTEM FOR OPTICAL RECORDING/READING

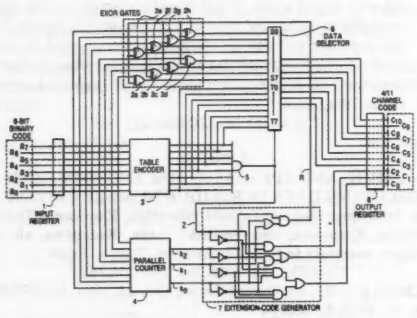
Hiromichi Ishibashi, Toyonaka, and Shinichi Tanaka, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 19, 1989, Ser. No. 383,153

Claims priority, application Japan, Jul. 22, 1988, 63-184308

Int. Cl.[5] H03M *7/20*

U.S. Cl. 341—102 **8 Claims**



1. An encoding system for converting an M-bit binary code composed of M bits each being a "1" or a "0" to an N-bit channel code composed of N bits each being a "1" or a "0", the number of "1"s in said N-bit channel code being a fixed number, i, said system comprising:

a count means for counting the number of "1"s, k, in an input M-bit binary code;

a logic gate means responsive to a count value, k, by said count means for passing said input M-bit binary code as is when k is equal to or smaller than i and inverting a logic state of said input M-bit binary code when k is larger than (M−i), said M-bit binary code passed as is or the logic inverted M-bit binary code being outputted as a first M-bit temporary code from said logic gate means;

an encoding means for encoding said input M-bit binary code into a specific M-bit binary code when said input M-bit binary code is one of a plurality of predetermined codes, said specific M-bit binary code being outputted as a second M-bit temporary code from said encoding means;

a selection means for selectively outputting said second M-bit temporary code when said input M-bit binary code is one of said plurality of predetermined codes and for otherwise outputting said first M-bit temporary code to obtain a selected M-bit temporary code;

an extension code producing means for producing an (N—M)-bit extension code according to said input M-bit binary code such that the total number of "1"s in said selected M-bit temporary code and said (N−M) bit extension code becomes equal to i; and

a means for combining said selected M-bit temporary code and said (N−M)-bit extension code to obtain said N-bit channel code.

5,008,670

PHASE/DIGITAL CONVERSION METHOD AND ARRANGEMENTS FOR IMPLEMENTING THE METHOD

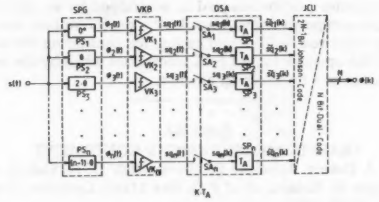
Manfred Zimmer, Ulm, Fed. Rep. of Germany, assignor to Licentia Patent Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

Filed Mar. 31, 1989, Ser. No. 331,372

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1988, 3811018; Sep. 29, 1988, 3833005

Int. Cl.[5] H03M *1/48*

U.S. Cl. 341—113 **15 Claims**



1. In a method of converting an analog signal to a digital phase form in which an input signal $s(t)=x(t)+jy(t)$ present in the form of orthogonal signal components x(t) and y(t) is converted with the use of a combination network and a plurality of comparators into a digital phase signal at outputs of the comparators, the improvement comprising the steps of:

for digital phase resolution to 2^N identical phase increments $\Theta=2\pi\cdot 2^{-N}$, forming from the signal components X(t) and y(t) signal phases

$$\phi i(t)=[di\cdot x(t)]ai\cdot xi(t)+bi\cdot y(t) \text{ (where } i=1, 2, \ldots 2^{N-1})$$

which are shifted in phase by identical phase angles, wherein ai and bi are weighting coefficients with the relation

$$bi/ai=\tan \Theta i$$

where $\Theta i=(i-1)\Theta$; and

evaluating the signs of the signal phases with the comparators to obtain digital phase signals sqi(t), wherein $sqi(t)=sqn\phi i(t)$, for $i=1, 2, \ldots 2^{N-1}$.

5,008,671

HIGH-SPEED DIGITAL-TO-ANALOG CONVERTER WITH BIMOS CELL STRUCTURE

Michael G. Tuthill, Limerick, Ireland, assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Jun. 27, 1988, Ser. No. 211,707

Int. Cl.[5] H03M *1/78*

U.S. Cl. 341—136 **9 Claims**

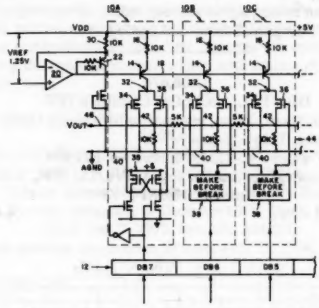
1. A digital-to-analog converter (DAC) with means to receive a binary input code and including a plurality of identical high-speed DAC cells each developing a continuous current output for selective connection to a corresponding input node of an R/2R ladder network to produce on the ladder output line a composite analog signal corresponding to the input code; each of said identical DAC cells comprising:

(A) a bipolar transistor connected to first circuit means arranged so that said bipolar transistor serves as a current source;

(B) MOS switch means with an input terminal connected to the output of said bipolar transistor to receive said continuous output current, said MOS switch means having a channel polarity which is the same as the polarity of the collector/emitter of said bipolar transistor, said switch means further having first and second output terminals alternatively connectable to said switch means input terminal to carry said continuous

output current, said first and second output terminals being connected respectively to (1) a common reference line and (2) a corresponding input node of said R/2R ladder; and

(C) second circuit means responsive to said input code for



controlling the conditioning of the corresponding MOS switch means to activate a selected one of said output terminals to carry said continuous current of the corresponding bipolar current source either to said common reference line or to the corresponding ladder input node.

5,008,672

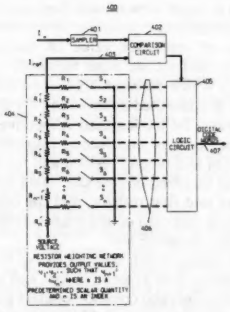
SIGNAL CONVERSION APPARATUS WHICH REDUCES QUANTIZATION ERRORS FOR TELECOMMUNICATIONS APPLICATIONS

Harold G. Leedy, Westminster, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 29, 1988, Ser. No. 291,728

Int. Cl.[5] H03M *1/06, 1/34, 1/00, 1/80*

U.S. Cl. 341—138 **17 Claims**



1. Signal conversion apparatus comprising

means for receiving input signals, each input signal having a value falling within one of a plurality of input signal ranges; and

means for associating the range corresponding to each received input signal value with an output signal whose value is different for each of said plurality of ranges, all of the output signal values corresponding to said plurality of input signal ranges forming an ordered set, any one output signal value that follows a first output signal value in said set being equal to the immediately preceding output signal value multiplied by a predetermined factor, said factor having one value for at least three consecutive output signal values in said set.

5,008,673

DIGITAL TO ANALOG CONVERTER ENHANCING CONVERSION PRECISION

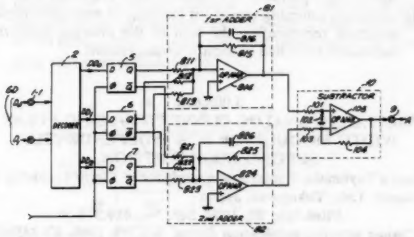
Eiichi Ishii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 22, 1989, Ser. No. 314,148

Claims priority, application Japan, Feb. 26, 1988, 63-44995

Int. Cl.[5] H03M *1/66*

U.S. Cl. 341—144 **7 Claims**



1. A digital-to-analog converter comprising a plurality of flip-flops, each of said flip-flops temporarily storing corresponding bit data of digital data to be converted and producing true and complementary outputs relative to the stored data, first means coupled to all of said flip-flops for adding the true outputs produced by all of said flip-flops to output a first signal, second means coupled to all of said flip-flops for adding the complementary outputs produced by all of said flip-flops to produce a second signal, and third means coupled to said first and second means for producing an output signal relative to a difference between said first and second signals.

5,008,674

DIGITAL-TO-ANALOG CONVERTER USING SWITCHED CAPACITOR AND TRANSVERSE FILTER

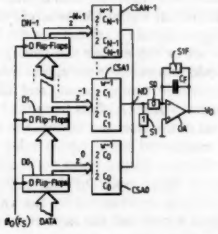
Jose D. A. E. Da Franca; Joao P. C. C. Vital, and Carlos M. D. A. D. A. Leme, all of Lisbon, Portugal, assignors to British Telecommunications, London, England

Filed Jun. 8, 1989, Ser. No. 362,981

Claims priority, application United Kingdom, Jun. 3, 1988, 8813162

Int. Cl.[5] H03M *1/82*

U.S. Cl. 341—150 **8 Claims**



1. An apparatus for producing a filtered analogue output signal from a digital signal, said digital signal being in the form of a sequence of digital signal samples each having a plurality of bits comprising:

(a) digital delay means receiving a first sequence of digital signal samples and producing further sequences of digital signal samples, each said further sequence being a replica of said first sequence delayed with respect thereto by a respective delay period, thereby making available a plurality of earlier samples simultaneously with each sample of said first sequence;

(b) conversion and weighting means comprising a plurality of switched capacitor arrangements, each for receiving a respective one of said sequences of digital signal samples; wherein each said switched capacitor arrangement has a plurality of capacitors with values weighted according to the significances of respective bits of said samples and switching means for supplying, in dependence on the states of bits of each received sample, charges to said capacitors, thereby forming a total charge dependent on the value represented by said sample, said total charges each being weighted by a respective one of a set of coefficients corresponding to a desired filter response; and

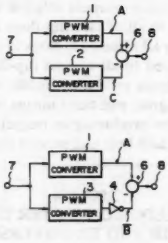
(c) common summing means for forming an analogue output sequence representing the sum of the charges from the individual switched capacitor arrangements.

5,008,675

DIGITAL TO ANALOG CONVERTER USING PULSE WIDTH MODULATOR FOR INDEPENDENTLY SETTING EDGE POSITION

Kazuya Toyomaki, Zama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 29, 1989, Ser. No. 414,278
Claims priority, application Japan, Sep. 29, 1988, 63-245697
Int. Cl.[5] H03M 1/82
U.S. Cl. 341—152 **2 Claims**



1. A PWM type D/A converter wherein digital input signals supplied to the converter at each predetermined input sample period are designated as odd and even numbered input signals alternately in the order of input, the reference timing point for outputting an odd numbered input signal is designated as an odd numbered reference timing point, and the reference timing point for outputting an even number is designated as an even numbered reference timing point, said PWM type D/A converter comprising:

a first PWM converter receiving said digital input signal for outputting an output signal (A) wherein the timing point when said output signal (A) rises from the low level to the high level is set at the earlier the timing, the larger the value of the odd numbered input signal relative to the odd numbered reference timing point, and the timing point when said output signal (A) falls from the high level to the low level is set at the later the timing, the larger the value of the even numbered input signal relative to the even numbered reference timing point, and wherein the pulse width from the rising point to the falling point of said output signal (A) is determined by the values of the odd numbered input signal and the next even numbered input signal;

a second PWM converter receiving said digital input signal for outputting an output signal (B) wherein the timing point when said output signal (B) falls from the high level to the low level is set at the later the timing, the larger the value of the odd numbered input signal relative to the odd numbered reference timing point, and the timing when said output signal (B) rises from the low level to the high level is set at the earlier the timing, the larger the value of the even numbered input signal relative to the even numbered reference timing point, and wherein the pulse width from the rising point to the falling point of said output signal (B) is determined by the values of the even numbered input signal and the next odd numbered input signal; and

an analog adder for adding together said output signal (A) from said first PWM converter and said output signal (B) from said second PWM converter to output a sum signal (A+B);

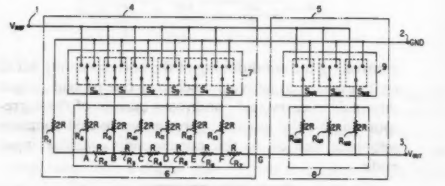
wherein an analog signal corresponding to said digital input signal is outputted from said analog adder.

5,008,676

DIGITAL/ANALOG CONVERTER

Kenji Kanoh, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1990, Ser. No. 551,994
Claims priority, application Japan, Feb. 15, 1990, 2-34677
Int. Cl.[5] H03M 1/78
U.S. Cl. 341—154 **4 Claims**



1. A digital/analog converter which converts a digital signal of a binary number consisting of N_L low-order bits and N_U high-order bits into an analog signal, comprising:

a first input terminal to which first reference potential is applied;

a second input terminal to which second reference potential is applied;

an output terminal;

a first digital/analog converting circuit driven in accordance with a digital data of said low-order bits; and

a second digital/analog converting circuit driven in accordance with a digital data of said high-order bits;

said first digital/analog converting circuit including:

a first resistor of resistance value 2R having its one end connected to said second input terminal;

R-2R circuitry which includes N_L second resistors of resistance value R connected in series and N_L third resistors of resistance value 2R having their respective one ends connected to one ends of said second resistors; a junction of the one end of said second resistor and the one end of said third resistor disposed on one side being connected to the other end of said first resistor, and the other end of said second resistor disposed on the other side being connected to said output terminal; and

a first switch group which consists of N_L first changeover switches having their respective first and second changeover contact points and common contact points; in each of said first changeover switches, said first changeover contact point being connected to said first input terminal, said second changeover contact point being connected to said second input terminal and said common contact point being connected to the other end of said corresponding third resistor, and each of said first changeover switches changing its connection between said first and second changeover contact points in accordance with a state of each bit of said low-order bits;

said second digital/analog converting circuit including:

2R circuitry which consists of (2^N-1) fourth resistors of resistance value 2R having their respective one ends commonly connected and having said one ends connected to said output terminal; and

a second switch group which consists of (2^N-1) second

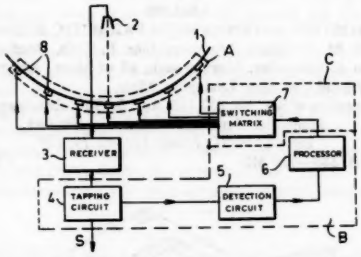
changeover switches having their respective first and second changeover contact points and common contact points; in each of said second changeover switches, said first changeover contact point being connected to said first input terminal, said second changeover contact point being connected to said second input terminal and said common contact point being connected to the other end of said corresponding fourth resistor, and the number of said second changeover switches changing their respective connections to said first changeover contact points being determined in accordance with a state of said high-order bits.

5,008,677

ANTI-JAMMING DEVICE FOR A RADAR PROVIDED WITH A REFLECTOR ANTENNA

Roland Trigon; Serge Drabowitch, and Joseph Roger, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 7, 1977, Ser. No. 816,280
Claims priority, application France, Jul. 13, 1976, 76 21400
Int. Cl.[5] G01S *7/36, 7/40*
U.S. Cl. 342—17 **12 Claims**



1. In a radar system subject to jamming, provided with an antenna including a primary radiator and a reflector juxtaposed therewith for directing incoming wave energy to said radiator, the latter having an output connection to a signal receiver,

the combination therewith of an anti-jamming device comprising:

phase-modifying means closely juxtaposed with said reflector for shifting the phases of signal waves reflected toward said radiator, said phase-modifying means being settable to a plurality of operational states introducing different phase shifts;

detector means connected to said receiver for generating test signals representative of incoming wave energy intercepted by the reflector; and

processing means for emitting switching commands to said phase-modifying means successively setting same in each of said operational states, said processing means being connected to said detector means for comparing the test signals generated in each of said operational states and for preserving a switching command found to result in a minimum of intercepted wave energy.

5,008,678

ELECTRONICALLY SCANNING VEHICLE RADAR SENSOR

Martin I. Herman, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 2, 1990, Ser. No. 487,338
Int. Cl.[5] G01S *13/60*
U.S. Cl. 342—158 **10 Claims**

1. A scanning vehicle radar sensor, comprising:

support means;

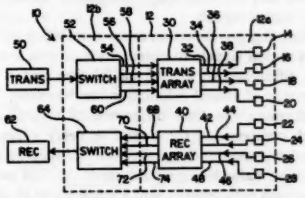
a plurality of transmitting elements formed on the support means in predetermined relation to each other for scanning a predetermined pattern relative to a vehicle on which the sensor is mounted;

a passive phased transmitting array means formed on the support means, having a plurality of inputs, and a plurality of outputs connected to the transmitting antenna elements respectively;

radar transmitter means;

electronic transmitting switch means for sequentially connecting an output of the transmitter means to the inputs of the transmitting array means, and thereby scanning the transmitting antenna elements respectively;

a plurality of receiving antenna elements formed on the support means in predetermined relation to each other and to the transmitting antenna elements respectively for scanning said predetermined pattern;



a passive phase receiving array means formed on the support means, having a plurality of inputs connected to the receiving antenna elements respectively, and a plurality of outputs;

radar receiving means; and

electronic receiving switch means for scanning the receiving antenna elements in synchronism with operation of the transmitting switch means by sequentially connecting an input of the receiver means to the outputs of the receiving array means respectively;

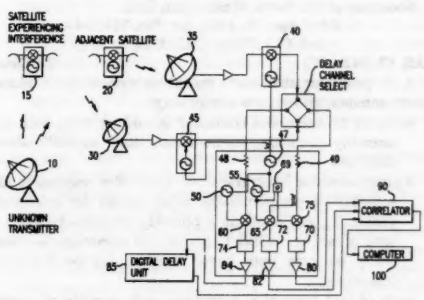
the support means comprising a flexible sheet having a surface on which the transmitting and receiving antenna elements are formed for facing away from the vehicle, the sheet being capable of flexure for conforming to a non-planar surface of the vehicle on which the sensor is to be mounted.

5,008,679

METHOD AND SYSTEM FOR LOCATING AN UNKNOWN TRANSMITTER

John E. Effland, Gaithersburg, Md.; John M. Gipson, Silver Spring, Md.; David B. Shaffer, Annapolis, Md., and John C. Webber, Herndon, Va., assignors to Interferometrics Incorporated, Vienna, Va.

Filed Jan. 31, 1990, Ser. No. 472,837
Int. Cl.[5] H04B *7/185;* **G01S** *5/02, 3/02, 1/24*
U.S. Cl. 342—353 **21 Claims**



1. A method of locating an unknown radio-frequency trans-

mitter by remote and passive observation, comprising the steps of:

(a) receiving a signal radiated from the transmitter into space, a plurality of receivers at different locations receiving the radiated signal;

(b) retransmitting, from each of the plurality of receivers, the signal radiated from the transmitter to a plurality of antennas, each at a known location, one of each of the antennas receiving the retransmtited signal from one of the receivers, each of the received retransmitted signals being delayed by a first path length equal to a distance between the transmitter and one of the receivers and by a second path length equal to a distance between one of the receivers and one of the antennas;

(c) receiving the retransmitted signals by the antennas;

(d) converting the received retransmitted signals to a plurality of digital signals;

(e) performing pre-detection cross-correlation on the plurality of digital signals to obtain a set of data from which a time difference of arrival calculation and a frequency difference of arrival calculation can be made;

(f) performing the time difference of arrival calculation which compensates for a relative delay value in the received retransmitted signals from the receivers, the relative delay value being a function of the first path lengths, the second path lengths, and a value equal to the speed of light;

(g) performing the frequency difference of arrival calculation which compensates for a relative frequency value in the received retransmitted signals from the receivers, the relative frequency value being related to a difference between a first relative velocity of one of the receivers with respect to the velocity of Earth and a second relative velocity of another of the receivers with respect to the velocity of Earth;

(h) repeating each of the prior steps a plurality of times; and

(i) determining the location of the transmitter by generating isodelay lines of position based on a plurality of the time difference of arrival calculations, by generating isodoppler lines of position based on a plurality of the frequency difference of arrival calculations, and locating the intersections of paired, generated isodelay and isodoppler lines of position, the intersections defining a region in which the transmitter is located.

5,008,680

PROGRAMMABLE BEAM TRANSFORM AND BEAM STEERING CONTROL SYSTEM FOR A PHASED ARRAY RADAR ANTENNA

Jefferson M. Willey, Columbia, Md.; James J. Alter, Fairfax Station, and Jules P. Letellier, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 29, 1988, Ser. No. 187,804

Int. Cl.[5] H01Q *3/22, 3/24, 3/26*

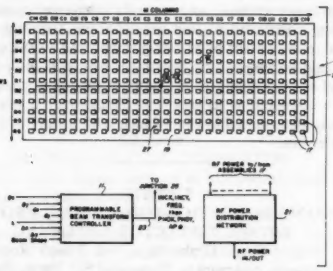
U.S. Cl. 342—372 **18 Claims**

1. A programmable beam transform system for a phased array antenna, said system comprising:

an array of assemblies contained in said antenna, each said assembly containing its own associated internally-stored data; and

a programmable beam transform controller responsive to a plurality of programmable input signals for selectively generating and applying a plurality of control signals to each of said assemblies to enable said assemblies to collectively perform both beam steering and beam-shaping operations;

each of said assemblies modifying said plurality of control signals applied thereto as a function of its associated internally-stored data to phase shift associated energy applied thereto in order to cause said assemblies to collectively



transmit and/or receive an energy beam at any desired beam position and with any desired beam pattern.

5,008,681

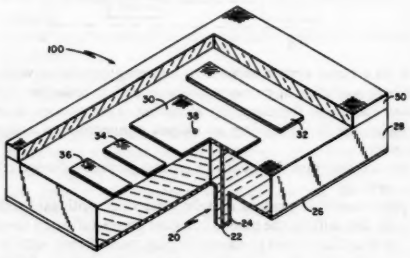
MICROSTRIP ANTENNA WITH PARASITIC ELEMENTS

Nunzio M. Cavallaro, Methuen; John F. Toth, Reading, and Cleo J. Alexander, Marlborough, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 332,145, Apr. 3, 1989, abandoned. This application Jun. 8, 1990, Ser. No. 536,043

Int. Cl.[5] H01Q *1/380, 13/080, 19/300*

U.S. Cl. 343—700 MS **6 Claims**



5. An antenna comprising:

a plurality of elements disposed along a first direction in an array, each one of the plurality of elements having a center, a width and a length, the length of each one of the plurality disposed in a direction along the first direction and the width of each one of the plurality of elements disposed in a direction orthogonal to the first direction, the plurality of elements comprising:

(a) a patch radiator element having a width approximately 0.380 of a wavelength of radio frequency (RF) energy propagating therein and a length approximately 0.494 of a wavelength of the RF energy;

(b) a reflector element having a width approximately 0.494 of a wavelength of the RF energy and a length approximately 0.304 of a wavelength of the RF energy, the center of the reflector element disposed approximately 0.570 of a wavelength of the RF energy from the center of the patch radiator element, and

(c) a director element having a width approximately 0.266 of a wavelength of the RF energy and a length of 0.114 of a wavelength of the RF energy, the center of the director element disposed approximately 0.456 of a wavelength of the RF energy from the center of the patch radiator element.

5,008,682

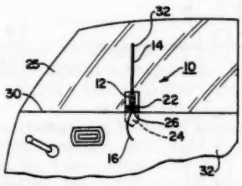
PORTABLE ANTENNA FOR MOUNTING ON INSIDE OF MOTOR VEHICLE

Herbert R. Blaese, 3314 Olcott Ave., Chicago, Ill. 60634

Continuation of Ser. No. 459,939, Jan. 2, 1990, Pat. No. 4,990,928. This application Sep. 17, 1990, Ser. No. 583,667

Int. Cl.[5] H01Q *1/100, 1/320, 9/000, 1/120*

U.S. Cl. 343—713 7 Claims



1. A portable antenna for mounting adjacent the lower window ledge of a motor vehicle which comprises:

a housing;

a radiator having a distal end and a proximal end, the proximal end being located within the housing and the distal end being located outside of the housing;

an electrical cable coupled to the housing;

a support member coupled to the housing, the support member extending generally in the opposite direction of the radiator and having a portion for insertion and retention between the side window and the lower window ledge of the door frame of a motor vehicle with the radiator being located on the inside of the vehicle; and

means connecting said housing to said support member.

5,008,683

THERMAL TRANSFER RECORDING METHOD

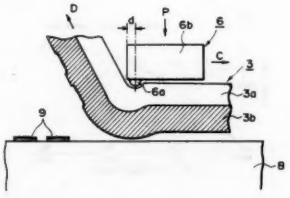
Takayuki Suzuki, Saitama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1989, Ser. No. 367,262

Claims priority, application Japan, Jun. 17, 1988, 63-148088

Int. Cl.[5] G01D *15/10*

U.S. Cl. 346—1.1 5 Claims



1. A thermal transfer recording method, comprising:

providing a thermal transfer material comprising a support and a heat-transferable ink layer which is capable of providing a melt viscosity such that said melt viscosity decreases in the direction of from the support side toward the surface side thereof, said thermal transfer material being housed in a cassette whereby said thermal transfer material can be reused by turning said cassette over;

superimposing the thermal transfer material on a recording medium so that the heat-transferable ink layer contacts the recording medium;

heating the thermal transfer material from the support side thereof by means of a recording head corresponding to an image signal; and

separating the thermal transfer material from the recording medium immediately after the heating;

reversing said thermal transfer material when said thermal transfer material is exhausted by turning said cassette over;

wherein said recording head comprises a substrate and a heat-generating member disposed thereon; and distance from the center of said heat-generating member to the trailing end of the substrate disposed downstream of the heat-generating member with respect to the movement of the thermal transfer material being 1 mm or shorter.

5,008,684

HEAD DRIVING APPARATUS FOR THERMAL PRINTER

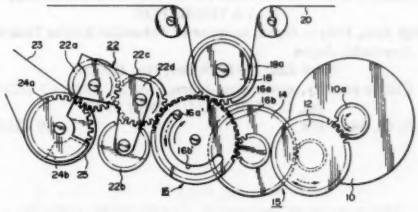
Hiroshi Kurafuji, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1990, Ser. No. 506,854

Claims priority, application Japan, Apr. 12, 1989, 1-92061

Int. Cl.[5] B41J *2/32*

U.S. Cl. 346—76 PH 4 Claims



1. An apparatus for driving a thermal head in a thermal printer, comprising:

(a) a carriage for supporting the thermal head in confronting relation to a platen on which a print paper is to be supported, said carriage being movable in a forward direction along a longitudinal path parallel to the axis of the platen, with the thermal head pressed against the platen via an ink ribbon and the print paper, during forward movement for printing, and said carriage being movable in a backward direction along the longitudinal path to return to its original position, with the thermal head off the platen, during returning;

(b) a support shaft for supporting thereon said carriage in such a manner that said carriage is slidable along said support shaft longitudinally thereof;

(c) a carriage driving mechanism for driving said carriage to move on and along said support shaft in said forward and backward directions, said carriage driving mechanism including a drive motor rotatable forwardly and reversely corresponding to the forward and backward movements of said carriage, a reduction gear train operatively connected to a driving shaft of said drive motor, and a carriage feed wheel, said carriage feed wheel being composed of a lower gear having a engaging pawl and meshable with said reduction gear train for performing the forward and backward movements of said carriage, and an upper gear having a play groove engageable with said engaging pawl of said lower gear, said upper gear being pivotable coaxially of said lower gear, said upper gear being rotatable as a unit with said lower gear, with said engaging pawl being in engagement with one of opposite ends of said play groove during the forward movement and the returning of said carriage; and

(d) a head loading mechanism for bringing the thermal head into and out of the platen at respective ends of the forward and backward movements of said carriage, said head loading mechanism including a pulley operatively connected to said support shaft of said carriage driving mechanism by a belt, upper and lower sector wheels each having a tooth-free portion and a toothed portion and coaxially connected to said pulley, a carriage driving idle wheel normally meshing with said lower gear of said carriage feed wheel, and upper and lower idle gears locatable in

confronting relation to the respective tooth-free portions of said upper and lower sector wheels for idle rotation during the forward and backward movements of said carriage, said upper and lower idle gears being meshable with the respective toothed portions of said upper and lower sector wheels for angular movement through a predetermined angle while said engaging pawl of said lower gear slides in and along said play groove of said upper gear as said drive motor is rotated reversely when said carriage is switched over between the forward movement and the backward movement, whereby said support shaft of said carriage is angularly moved through said predetermined angle, in response to the angular movement of said upper and lower sector wheels, to bring the thermal head into and out of engagement with the print paper on said platen.

5,008,685

LASER GENERATOR FOR PRODUCING MODULATING DATA THEREFOR

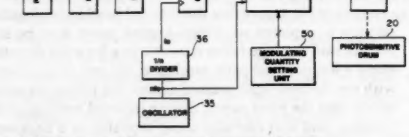
Seiji Arai, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 19, 1989, Ser. No. 299,185

Claims priority, application Japan, Jan. 22, 1988, 63-122841

Int. Cl.[5] G01D *15/14*; B41J *2/47*

U.S. Cl. 346—108 **10 Claims**



1. A laser generating apparatus comprising:

means for generating serial data corresponding to image information in accordance with an appropriate data transferring clock, the data transferring clock having a frequency;

means for generating a clock signal having a frequency which is n times that of the frequency of the data transferring clock where n is a natural number;

modulating data generating means for delaying the serial data by a desired quantity in accordance with the generated clock signal and for outputting modulating data indicative of the logical sum of the delayed serial data and the serial data; and

laser scanner for receiving the modulating data, for modulating a laser beam in accordance with the received modulating data, and for forming a latent image on a photosensitive body, the latent image corresponding to the image information, by irradiating and scanning the modulated beam onto and over the photosensitive body.

5,008,686

OPTICAL SCANNING DEVICE FOR SCANNING A PREDETERMINED SURFACE WITH A PLURALITY OF LIGHT BEAMS

Hiroshi Saito, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1989, Ser. No. 394,542

Claims priority, application Japan, Aug. 19, 1988, 63-206043

Int. Cl.[5] G01D *9/00*

U.S. Cl. 346—108 **8 Claims**

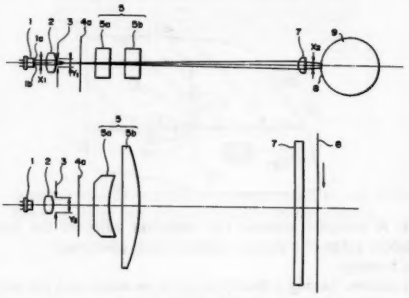
4. An optical scanning device comprising:

a light source having a plurality of light emitting portions arranged in a sub scanning direction;

first optical means for directing a plurality of light beams from said light source to a deflector;

a deflector for deflecting the plurality of light beams from said first optical means;

second optical means for directing the plurality of light beams from said deflector to a third optical means, said second optical means being afocal in the sub scanning



direction and having the f-θ characteristic in a main scanning direction; and

third optical means, provided commonly for the plurality of light beams, for directing the plurality of light beams from said second optical means onto a predetermined surface, said third optical means being anamorphic and having different imaging magnifications in the main scanning direction and the sub scanning direction.

5,008,687

DATA STORAGE MEDIUM

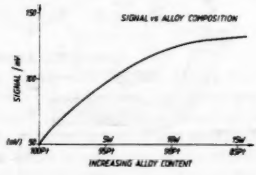
Robert J. Longman, Coton; Peter R. Helfet, and Michael J. Abrams, both of London, all of England, assignors to Plasmon Limited, Royston, England

Filed Feb. 9, 1989, Ser. No. 309,343

Claims priority, application United Kingdom, Feb. 9, 1988, 8802930

Int. Cl.[5] G01D *9/00*; B32B *3/24*; G03C *1/00*; B05D *3/00*

U.S. Cl. 346—135.1 **15 Claims**



1. A data storage medium which is responsive to incident electromagnetic radiation and the surface of a surface region of which includes a layer of heat sensitive plastics material which undergoes a large volume change upon degradation and which has a textured surface pattern in the from of a regular array of grooves or protuberances, the dimensions of the surface features which constitute said textured surface pattern being in the sub-micron range, and wherein said textured surface pattern is overcoated with a thin film of an alloy, said thin alloy film and the surface region of said plastics material in contact with said thin alloy film together constituting a recording layer which undergoes a change in response to said incident electromagnetic radiation whereby said thin alloy film is deformed from its original physical configuration without undergoing rupture, said alloy comprising (1) a first component which is at least one of ruthenium, rhodium, palladium, osmium, iridium and platinum; and (2) at least one metallic element from

Groups Va, VIa, VIIa, and Ib of the Periodic Table of elements according to Mendeleev; and said film conforming substantially to said textured surface pattern, and said thin film constituting means for absorbing said electromagnetic energy without impairing the continuity of said thin film and conducting energy from said incident electromagnetic radiation to cause degradation of said plastics material which undergoes a local volume change and correspondingly changes the surface configuration of said thin film for, the recordation of information.

5,008,688

INK JET RECORDING APPARATUS CAPABLE OF MOUNTING AN INK TANK AND INK TANK FOR USE IN SAME

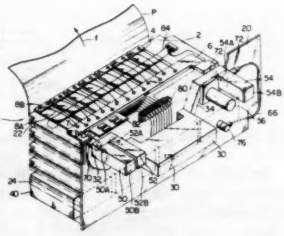
Ryuichi Ebinuma, Hiratsuka; Yoshifumi Hattori, Yamato, and Hiroo Ichihashi, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

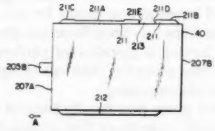
Continuation of Ser. No. 43,818, Apr. 29, 1987, abandoned, which is a division of Ser. No. 913,613, Sep. 29, 1986, Pat. No. 4,680,696, which is a continuation of Ser. No. 684,117, Dec. 20, 1984, abandoned. This application May 15, 1989, Ser. No. 352,614

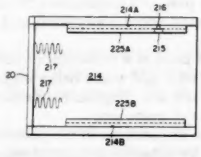
Claims priority, application Japan, Dec. 26, 1983, 58-244131; Dec. 26, 1983, 58-244132; Dec. 26, 1983, 58-244133; Dec. 26, 1983, 58-244134; Dec. 26, 1983, 58-244135; Dec. 26, 1983, 58-244136; Dec. 26, 1983, 58-244138

Int. Cl.[5] G01D *15/16*

U.S. Cl. 346—140 R **13 Claims**







11. An ink tank mountable to a storing portion of an ink jet recording apparatus body along a direction of mounting, said ink tank comprising:

a projection on a side thereof for engaging a displaceable member located on a side surface of the storing portion wherein said projection engages the displaceable member for mounting said ink tank to the storing portion;

a connecting portion located at an end of said ink tank, remote from the direction of mounting; and

a connecting member for supplying ink to said ink tank connectible to said connecting portion when said ink tank is mounted in the storing portion,

wherein the ink tank has a shape of a substantially rectangular parallelepiped, having a projection provided at a side thereof, said projection having a length sufficient to displace the displaceable member and to return the displaceable member after displacement with respect to a prior position of the displaceable member of the apparatus.

5,008,689

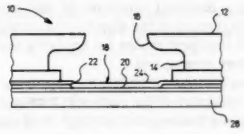
PLASTIC SUBSTRATE FOR THERMAL INK JET PRINTER

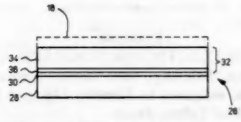
Alfred I-Tsung Pan, Sunnyvale; Eric G. Hanson, Burlingame; Christopher A. Schantz, Redwood City, and Winthrop D. Childers, San Diego, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 168,718, Mar. 16, 1988, Pat. No. 4,926,197. This application Mar. 9, 1990, Ser. No. 491,141

Int. Cl.[5] B41J *2/05*

U.S. Cl. 346—140 R **19 Claims**





1. A thermal ink jet printer print head, comprising:

a plastic base;

a metallization layer overlying the plastic base, the metallization layer having a thickness of from about 50 Angstroms to about 1000 Angstroms;

a dielectric structure overlying the metallization layer, the dielectric structure including

a metallic buffer layer overlying the metallization layer, the buffer layer having a thickness of greater than about 700 Angstroms, and

a layer of a dielectric material overlying the metallic buffer layer;

a resistor overlying the dielectric structure; and

an orifice plate with an orifice therein and an ink channel overlying the thin film resistor and dielectric structure.

5,008,690

IMAGE RECORDING APPARATUS FOR TRANSFERRING INK PATTERNS FORMED BY SELECTIVE APPLICATION OF ENERGY THROUGH ELECTRODES OF A RECORDING HEAD CONTROLLABLY BIASED AGAINST INK TRANSPORTED ON A ROLLER

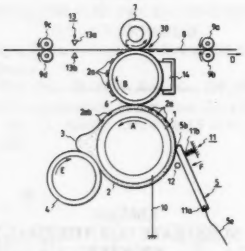
Norihiko Koizumi; Hiroshi Tanioka, both of Yokohama; Noboru Toyama; Kozo Arahara, both of Kawasaki, and Toshiya Yuasa, Mitaka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1988, Ser. No. 281,453

Claims priority, application Japan, Dec. 10, 1987, 62-311025; Jan. 12, 1988, 63-003117; Jan. 22, 1988, 63-010847; Jan. 22, 1988, 63-010849

Int. Cl.[5] B41J *2/33, 2/35, 2/40, 2/42;* G01D *15/16, 15/20*

U.S. Cl. 346—140 R 4 Claims



1. An image recording apparatus for recording images on a recording medium, said apparatus comprising:

ink transport means for transporting fluid ink;

energy applying means for selectively applying energy to said ink transported by said ink transport means;

transfer means for transferring to the recording medium said ink whose transfer characteristic has been changed in conformity with the selective application of said energy, said transfer occurring at a location different from where said energy is applied;

coating means disposed upstream of said energy applying means with respect to the direction of transport of said ink by said ink transport means for applying said ink onto said ink transport means; and

biasing means for biasing said energy applying means against said ink transported by said ink transport means, said biasing means biasing said energy applying means such that at least a minimum gap is maintained between said energy applying means and said ink transport means.

5,008,691

MULTI-COLOR ELECTROPHOTOGRAPH APPARATUS

Takao Kumasaka, Takahagi, and Yuzuru Simazaki, Hitachi, both of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Sep. 15, 1989, Ser. No. 407,859

Claims priority, application Japan, Sep. 21, 1988, 63-234999

Int. Cl.[5] G01D *15/00*

U.S. Cl. 346—157 24 Claims

1. A multi-color electrophotograph apparatus comprising:

a photosensitive drum;

a first means for producing an image, disposed in proximity to said photosensitive drum, said first means comprising;

a first charging element;

a first exposure station; and

a first developer; and

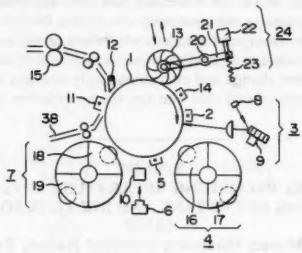
a second means for producing an image, disposed in proximity to said photosensitive drum, said second means comprising,

a second charging element;

a second exposure station, and

a second developer;

wherein at least one of said first and second developers has



a two-color change function, and a multi-color printing operation is carried out in at most two rotations of said photosensitive drum.

5,008,692

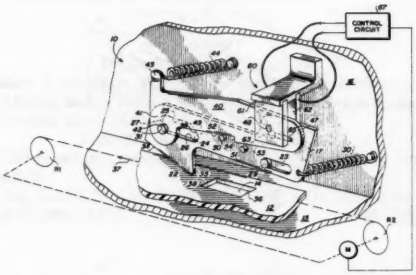
FILM METERING APPARATUS AND METHOD WITH DRIVE SPEED REDUCTION

Conrad Diehl, Rochester; David C. Smart, Fairport, and Wayne E. Stiehler, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1990, Ser. No. 486,488

Int. Cl.[5] G03B *1/12*

U.S. Cl. 354—173.1 18 Claims



1. In a camera having a housing, means defining an exposure plane within said housing, and means for advancing a strip of film in a frame-to-frame advance direction along said exposure plane, said film having a plurality of perforations located at predetermined frame metering intervals along said film, frame metering apparatus comprising:

first and second guide pins fixedly located on said housing;

an elongated pawl including a film perforation sensing tooth and first and second lift pins; said pawl being formed with an elongated slot and integral adjacent longitudinal and ramp surfaces; and said pawl being mounted for rotational and longitudinal movement relative to said housing, with said first guide pin engaging said slot and said second guide pin proximate said straight and ramp surfaces;

means biasing said pawl in a longitudinal direction, with said ramp surface being urged away from said second guide pin;

means biasing said pawl in a rotational direction about said first guide pin, with said tooth being urged toward said exposure plane and said longitudinal surface being urged toward said second guide pin;

an elongated blade disposed generally parallel to said pawl in engagement for rotation about said second guide pin; said blade being formed with a stepped surface having a first section proximate said first lift pin and having a second section proximate said second lift pin;

means biasing said blade in a rotational direction about said second guide pin, with said stepped surface being urged into contract with said first and second lift pins; and

means for detecting when said second section is in contact with said second lift pin;

said pawl, blade and biasing means being relatively dimensioned, configured and adapted so that said tooth is urged to engage in a perforation, with said longitudinal surface in contact with said second guide pin and said second section in contact with said second lift pin, when said film is moved in said advancement direction toward a position approaching registration of a next available exposure frame; so that said second section contact with said second lift pin is terminated and said first section is brought into contact with said first lift pin when said film reaches said position of registration; and so that said ramp surface is brought into engagement with said second guide pin against the bias of said longitudinal direction biasing means to disengage said tooth from said perforation in response to movement of said tooth with said film, when said film is moved beyond said registration position further in said advancement direction.

5,008,693

CAMERA

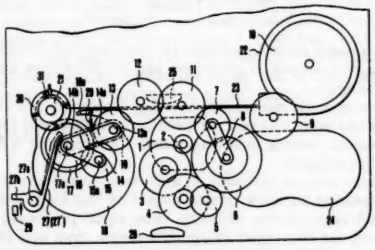
Michio Hirohata, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1989, Ser. No. 409,387

Claims priority, application Japan, Sep. 21, 1988, 63-237404; Sep. 26, 1988, 63-240189; Oct. 25, 1988, 63-269041; Dec. 1, 1988, 63-304420; Dec. 1, 1988, 63-304421; Dec. 1, 1988, 63-304422; Dec. 1, 1988, 63-304423; Dec. 28, 1988, 63-332176; Dec. 28, 1988, 63-332207

Int. Cl.[5] G03B *1/00*

U.S. Cl. 354—214 **41 Claims**



1. A camera of the kind arranged to wind a film onto a spool in a reverse winding direction, comprising:

(a) a spool for taking up the film in the reverse winding direction;

(b) a guide member; and

(c) position changing means for changing a position of said spool to cause the film to be inserted and pinched between said spool and said guide member so that the film is advanced by a driving force of said spool.

5,008,694

FILM PACKAGE AND DEVICE FOR LOADING FILMS

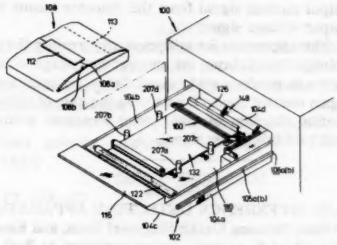
Kenji Tajima; Hiroshi Kushima, and Sadami Yamada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 54,175, May 26, 1987, Pat. No. 4,860,042. This application Jun. 16, 1989, Ser. No. 366,976

Claims priority, application Japan, May 23, 1986, 61-119975; Jul. 15, 1986, 61-167364; Nov. 29, 1986, 61-284479

Int. Cl.[5] G03B *17/26*

U.S. Cl. 354—277 **18 Claims**



1. A device for loading a film package storing a stack of sheet film in a bright environment, comprising:

a holder or a magazine for placing the film package therein, said holder or magazine having a receiver for storing the film package, said receiver being movable in a first direction in which said film package can be pulled out,

a light-shielding member pressable against said film package, and

a cutting means for cutting off said film package at a prescribed portion thereof in order to allow the sheet films to be loaded from the film package, the arrangement being such that when cutting off an end of said film package, the light-shielding member is pressed against the end of the film package to prevent extraneous light from entering the film package through a cut-off portion, said receiver and said light-shielding member being relatively movable away from each other to prevent said light-shield member from interfering with the film package as it is pulled out.

5,008,695

RANGEFINDER FOR CAMERA

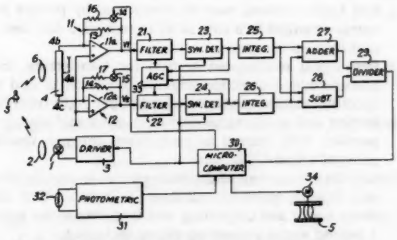
Shinji Nagaoka; Koji Sato, and Michio Kawai, all of Chiba, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1989, Ser. No. 369,794

Claims priority, application Japan, Jun. 30, 1988, 63-164441

Int. Cl.[5] G03B *3/00*; G01C *3/08*

U.S. Cl. 354—403 **14 Claims**



1. A rangefinder for use in a camera, comprising:

(a) light-emitting means for emitting light toward a subject to be photographed;

(b) spot light position detector means for producing an output current signal in response to said light reflected

from said subject, said spot light position detector means being disposed at a given distance from the light-emitting means;

(c) photometric means for measuring the brightness of said subject and incident extraneous light surrounding said subject, and for producing a brightness signal corresponding thereto; and

(d) circuit means for producing an output distance signal corresponding to the distance of the camera from said subject, in response to said output current signal, said circuit means having an amplification function and including:

(i) current-to-voltage converter means for converting the output current signal from the detector means into an output voltage signal;

(ii) arithmetic means for arithmetically treating the output voltage signal from the current-to-voltage converter means to produce said output distance signal; and

(iii) gain control means for varying the gain of said amplification function of said circuit means in accordance with said brightness signal.

5,008,696

PHASE DIFFERENCE DETECTING APPARATUS

Takashi Miida; Nozomu Ozaki; Shigenori Baba, and Kunimitsu Kousaka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

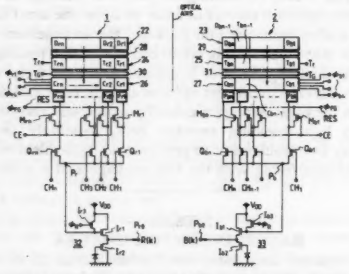
Filed Jul. 7, 1988, Ser. No. 216,354

Claims priority, application Japan, Jul. 7, 1987, 62-167906

The portion of the term of this patent subsequent to Jul. 31, 2007, has been disclaimed.

Int. Cl.[5] G03B *13/00*

U.S. Cl. 354—408 **4 Claims**



1. A phase difference detecting apparatus for detecting a relative distance between a pair of focused images obtained from subject luminous flux passed through an objective lens to thereby judge a focusing state of said objective lens, comprising:

a first signal generating means including,

a first light-receiving section constituted by picture elements arranged in a row so as to receive a first one of said focused images,

a first signal reading-out section for transferring, in a predetermined direction, signals generated in said respective picture elements of said first light-receiving section and at the same time outputting said signals in parallel, with respect to each other, through floating gates of a first CCD, and

means for converting said signals output in parallel from said floating gates of said first CCD into a first time series signal and outputting said first time series signal;

a second signal generating means including,

a second light-receiving section constituted by picture elements arranged in a row to receive a second one of said focused images,

a second signal reading-out section for transferring, in a predetermined direction, signals generated in said respective picture elements of said second light-receiving section and at the same time outputting said signals in parallel, with respect to each other, through floating gates of a second CCD, and

means for converting said signals output in parallel from said floating gates of said second CCD into a second time series signal which has a predetermined quantity of relative movement relative to said first time series signal and outputting said second time series signal;

switching-capacitor integrator means including a plurality of capacitive elements and switching elements for intermittently connecting said capacitive elements to each other, and for receiving said first and second time series signals; and

control means for comparing sizes of said first and second time series signals with each other to thereby generate a control signal corresponding to a relation of size between said first and second time series signals, and controlling said switching elements on the basis of said control signal to cause said switching-capacitor integrator means to generate an electric charge corresponding to an integrated value of an absolute value of a difference between said first and second time series signals and to cause said switching-capacitor integrator means to generate, as a correlation value, an integrated value on the basis of said first and second time series signals in predetermined numbers whenever said quantity of relative movement is changed in order to provide a signal indicative of a phase difference between said first and second time series signals.

5,008,697

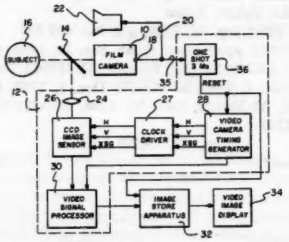
IMAGE RECORDING SYSTEM AND METHOD

Stephen A. Noble, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 31, 1990, Ser. No. 531,215

Int. Cl.[5] G03B *7/00, 15/05;* **H04N** *5/225, 3/14*

U.S. Cl. 354—413 **10 Claims**



1. An image recording system for simultaneously recording images of a subject in electronic and photosensitive media, comprising:

a photographic camera for recording a photographic image of said subject on said photosensitive medium, said photographic camera including means for supplying a flash request signal;

a video camera including a solid state image sensor for capturing an image of said subject on said image sensor, said video camera including video signal processing circuits for converting image information from said image sensor into a video signal and a video timing generator including image transfer clocking means for controlling transfer of the image information from said image sensor to said video processing circuits;

flash means responsive to said flash request signal for flash illuminating said subject to allow simultaneous image capture by said photographic and video cameras; and

reset means responsive to said flash request signal for interrupting operation of said clocking means at the beginning of a flash illumination and for restarting the clocking

means following conclusion of the flash illumination to initiate, at the beginning of an image field, the transfer of image information from the imaging device to the video signal processing circuits.

5,008,698

CONTROL APPARATUS FOR IMAGE SENSOR

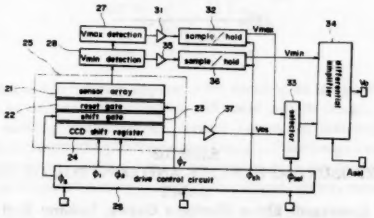
Sadao Muramatsu; Yukifumi Hashiba, and Yuuichi Ikeda, all of Tokyo, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Sep. 26, 1988, Ser. No. 248,983

Claims priority, application Japan, Sep. 28, 1987, 62-240878; Oct. 16, 1987, 62-259494; Dec. 29, 1987, 62-333729; Feb. 26, 1988, 63-42126; Mar. 28, 1988, 63-72004

Int. Cl.[5] G03B *13/36, 7/08*

U.S. Cl. 354—429 **21 Claims**



1. A control apparatus for an image sensor having an array of pixels, comprising

light detector means for deriving instantaneous maximum and minimum light detection signals from respective amounts of stored charge at pixels upon which the most intense and weakest components of the whole incident light upon said image sensor are respectively incident,

first stopping control means for stopping a charge accumulation of said image sensor based on a signal representing a difference between said instantaneous maximum and minimum light detection signals, and

second stopping control means responsive to said instantaneous maximum light detection signal increasing close to saturation for stopping further charge accumulation of said image sensor prior to said first stopping control means.

5,008,699

DEVICE FOR DRIVING SHUTTER

Shinji Tominaga, and Takeshi Hashimoto, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

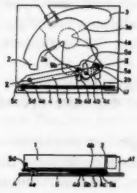
Division of Ser. No. 202,023, Jun. 3, 1988, Pat. No. 4,920,372.

This application Oct. 11, 1989, Ser. No. 419,967

Claims priority, application Japan, Jun. 4, 1987, 62-141073; Jun. 4, 1987, 62-141074; Jun. 4, 1987, 62-141075

Int. Cl.[5] G03B *7/08*

U.S. Cl. 354—457 **9 Claims**



1. A driving device used in a camera, comprising:

piezo-electric element;

driving means for driving said piezo-electric element by applying an electrical voltage to said piezo-electric element;

short-circuiting means connected in parallel to said piezo-electric element for short-circuiting said piezo-electric element; and

controlling means for controlling said driving means and said short-circuiting means so as to short-circuit said piezo-electric element except when said driving means is in an active state.

5,008,700

COLOR IMAGE RECORDING APPARATUS USING INTERMEDIATE IMAGE SHEET

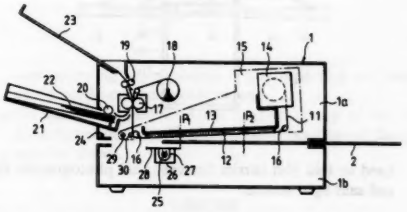
Tsugio Okamoto, Kani, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Nov. 25, 1988, Ser. No. 276,016

Claims priority, application Japan, Nov. 27, 1987, 62-181514[U]

Int. Cl.[5] G03B *27/32*

U.S. Cl. 355—27 **38 Claims**



1. An image recording apparatus for recording an image of an original on a first sheet, said apparatus using a second sheet and a third sheet, said second sheet carrying thereon at least one monochromatic color image corresponding to a color component of the original image and a machine readable data including arrangement information and exposure information representative of a recording condition for recording the color image on said third sheet, said apparatus comprising:

means for reading said machine readable data and providing an instruction regarding the recording condition;

means for irradiating light onto said third sheet through said second sheet to record a latent image on said third sheet corresponding to the color image on said second sheet;

means for controlling said irradiating means in response to said instruction; and

means for developing the latent image and providing a visible image on said first sheet.

5,008,701

PHOTOGRAPHIC PRINTER

Kanji Tokuda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 9, 1990, Ser. No. 564,516

Claims priority, application Japan, Aug. 18, 1989, 1-213704

Int. Cl.[5] G03B *27/72*

U.S. Cl. 355—35 **12 Claims**

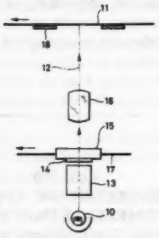
1. A photographic printer comprising:

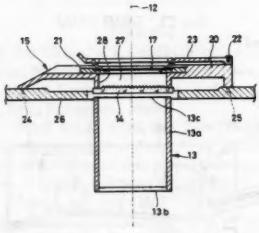
a light source for emitting a printing light;

a film carrier for holding a photographic film to be printed; and

an anisotropic diffusion plate for diffusing light only in a

direction perpendicular to a lengthwise direction of said photographic film, said anisotropic diffusion plate being





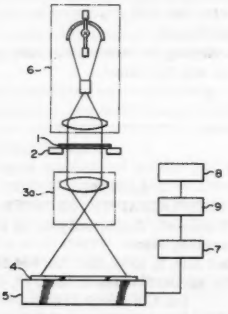
fixed to said film carrier between said photographic film and said light source.

5,008,702

EXPOSURE METHOD AND APPARATUS

Tsutomu Tanaka, Yokohama; Yoshitada Oshida, Fujisawa; Masataka Shiba, Yokohama; Naoto Nakashima, Kurita, and Ryuichi Funatsu, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 31, 1989, Ser. No. 401,619
Claims priority, application Japan, Sep. 7, 1988, 63-222355
Int. Cl.[5] G03B *27/68, 27/42*
U.S. Cl. 355—52 **46 Claims**



1. An enlargement projection type exposure method comprising the steps of:

a. projecting a circuit pattern of a mask through a lens system onto a substrate before exposure to form a pattern;

b. comparing the projected pattern on the substrate with design values therefor;

c. measuring an image distortion of the projected circuit pattern inherent in the lens system;

d. storing the measured image distortion in means for storing;

e. calculating control deviations of a surface level of the substrate to correct the measured image distortion stored in the storing means;

f. generating a fine displacement to elastically deform a shape of the substrate in accordance with the calculated control deviations; and

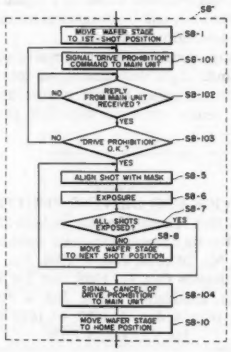
g. exposing the circuit pattern of the mask onto the substrate by projecting and enlarging the pattern through the lens system.

5,008,703

EXPOSURE APPARATUS AND CONTROL OF THE SAME

Eigo Kawakami, Ebina; Kunitaka Ozawa, Isehara; Koji Uda, Yokohama; Isamu Shimoda, Zama, and Shunichi Uzawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1989, Ser. No. 407,434
Claims priority, application Japan, Sep. 9, 1988, 63-224711
Int. Cl.[5] G03B *27/42*
U.S. Cl. 355—53 **9 Claims**



1. An exposure apparatus for printing, on a workpiece, a pattern formed on an original, said apparatus comprising:

exposure means for aligning the original and the workpiece, and/or for exposing the workpiece to the original with radiation energy;

driving means having no participation in the aligning operation and/or in the exposure operation of said exposure means; and

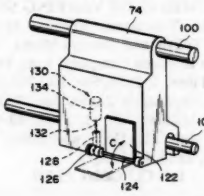
control means comprising means for determining whether the exposure means is performing the aligning and/or the exposure operation, said control means further comprising means for prohibiting the operation of said driving means on the basis of the determination when said exposure means performs the aligning operation and/or the exposure operation.

5,008,704

METHOD OF FORMING ORIGINAL IMAGE AND ADDITIONAL IMAGE, AND APPARATUS FOR PERFORMING SAME

Junji Watanabe, Yokohama, and Yuji Ishikawa, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 13, 1989, Ser. No. 337,738
Claims priority, application Japan, Apr. 15, 1988, 63-93106
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—202 24 Claims



1. An image forming apparatus for forming an image identical to an original image and an additional pattern image, both on a moving image carrier, having means for forming the image corresponding to the original image of the image carrier, and means for making visible the image and the additional pattern image which are formed on the image carrier, comprising:

means for entering data representing the specific pattern image;

means for generating pattern data corresponding to the data entered by said entering means; and

means for forming the pattern image corresponding to the pattern data generated by the pattern data generating means on the image carrier;

wherein said additional pattern image forming means is provided along a surface of the image carrier between an exposure section at which the image corresponding to the original image is formed on the image carrier and a developer at which both the image and the additional image are developed; and

said additional pattern image forming means is provided with shutter means for shutting off an incident light supplied to the exposure section, said shutter means having a width narrower than an illumination range of said additional pattern image forming means, measured in a direction normal to a direction in which the image carrier moves.

5,008,705

AUTOFOCUS SYSTEM FOR MICROLITHOGRAPHY

Glenn L. Sindledecker, Lexington, Mass., assignor to General Signal Corporation, Stamford, Conn.

Filed Apr. 23, 1990, Ser. No. 513,783
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—43 6 Claims

1. In a microlithographic system, apparatus for relatively positioning a lens and an object which is to be exposed through the lens, said apparatus comprising:

means for illuminating, at a shallow angle, a spot on the surface of the object which is approximately on the lens axis, the position of the spot being thereby a function of the spacing between the lens and the object;

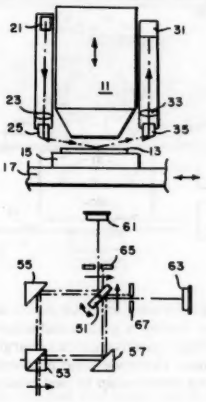
lens means for viewing said spot at a shallow angle and projecting a corresponding beam of light along a preselected path;

along said path of projection, a beam splitter for dividing said beam;

angularly oscillatable mirror means providing a pair of reflective surfaces in fixed relation to each other;

means for directing the split beams at respective ones of said reflective surfaces;

respective means for detecting each of the split beams after reflection from the respective reflective surfaces of said mirror means and generating respective pulse signals each



corresponding to the passing of the respective spot image past a predetermined position; and

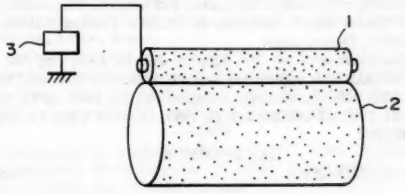
servo means responsive to the relative timing of the two pulse signals for adjusting the relative positions of the lens and the object.

5,008,706

ELECTROPHOTOGRAPHIC APPARATUS

Hiroyuki Ohmori, Tokyo; Hisami Tanaka, Yokohama, and Masami Okunuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1989, Ser. No. 426,197
Claims priority, application Japan, Oct. 31, 1988, 63-276879; Nov. 24, 1988, 63-297511
Int. Cl.[5] G03G *21/00, 15/02*
U.S. Cl. 355—219 11 Claims



1. An electrophotographic apparatus comprising a photosensitive member and a charging member disposed in contact with the photosensitive member; said photosensitive member being capable of being charged by applying a voltage to the charging member;

wherein the ten-point mean surface roughness (Rz_1) of the photosensitive member and the ten-point mean surface roughness (Rz_2) of the charging member satisfy the following relationships:

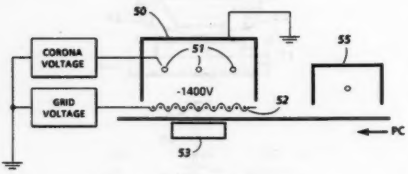
$$0.1 \text{ micron} \leqq Rz_1 + Rz_2 \leqq 6.0 \text{ microns},$$
$$0.05 \text{ micron} \leqq Rz_1 \leqq 5.0 \text{ microns, and}$$
$$0.05 \text{ micron} \leqq Rz_2 \leqq 5.0 \text{ microns.}$$

5,008,707

SIMULTANEOUS CHARGING AND EXPOSURE FOR PICTORIAL QUALITY

Joan R. Ewing, Fairport, and Donald E. Wiedrich, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 5, 1989, Ser. No. 402,729
Int. Cl.[5] G03G *15/02, 15/04*
U.S. Cl. 355—220 11 Claims



1. Apparatus for forming an electrostatic latent image on an imaging member having a photoconductive insulating layer comprising a voltage sensitive corona charging device having a corona generating electrode abnd a control electrode positioned in charging relationship to said photoconductive insulating layer,

means to energize said charging device to charge said photoconductive insulating layer to a first level comprising means to apply a corona generating voltage to said corona generating electrode and to apply a control voltage of a first magnitude to said control electrode,

means to expose said photoconductive insulating layer to an image pattern simultaneously while said charging device is energized,

a second voltage sensitive corona discharge device having a corona generating electrode and a control electrode in charging relationship to said photoconductive insulating layer downstream of said first voltage sensitive corona charging device, and

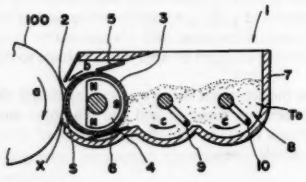
means to energize said second voltage sensitive corona discharge device to apply a control voltage to said control electrode of a magnitude less than said first magnitude.

5,008,708

MONOCOMPONENT DEVELOPING DEVICE

Yuji Enoguchi; Toshiya Natsuhara, and Masashi Yamamoto, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 225,465, Jul. 28, 1988, Pat. No. 4,907,032. This application Jan. 22, 1990, Ser. No. 468,235
Claims priority, application Japan, Jul. 31, 1987, 62-193585; Jul. 31, 1987, 62-193586; Jul. 31, 1987, 62-193587; Jul. 31, 1987, 62-193588
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—259 13 Claims



1. A developing device for developing an electrostatic latent image formed on a photoreceptor, comprising:

a cylindrical formed flexible member;

means for pressing said flexible member into contact with a surface portion of the photoreceptor using a magnetic force;

means for rotating said flexible member; and

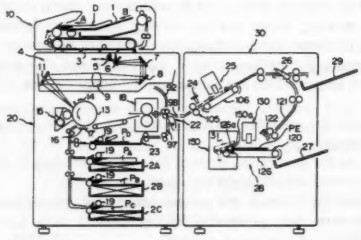
means for providing toner to a surface of said flexible member.

5,008,709

DOCUMENT RECYCLING COPIER FOR COPYING DOCUMENTS OF VARYING SIZES

Masayuki Shinada, Yokohama; Masumi Ikesue; Mitsutoyo Kikuno, both of Tokyo, and Tatsuya Murai, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 7, 1989, Ser. No. 362,686
Claims priority, application Japan, Jun. 7, 1988, 63-138542; Jun. 30, 1988, 63-162948; Jul. 11, 1988, 63-173609; Jul. 11, 1988, 63-173610; Jul. 11, 1988, 63-173611; Jul. 11, 1988, 63-173612; Jul. 11, 1988, 63-173613
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—309 16 Claims



1. A copier in which documents are recycled, comprising:

a plurality of paper feeding means each for feeding paper sheets of a different size;

copying means for copying documents on paper sheets which individually match said documents in size;

a recycling automatic document feeding device loaded with a recycling stack of documents having a plurality of sizes for sequentially transporting said documents one by one to an image expsosing station of said copying means;

a finisher for automatically binding copied paper sheets discharged from said copying means while regulating a stacking condition of said copied paper sheets;

document size sensing means for sensing the sizes of the documents being transported to the exposing station by said automatic document feeding device;

main control means for controlling said copying means and said automatic document feeding device such that a plurality of control operations are selectively performed;

finisher control means for controlling said finisher such that the copied paper sheets produced by the control operations of said main control means are bound and discharged,

wherein said plurality of control operations comprises a control operation in which said automatic document feeding device circulates all of the documents once while causing said document size sensing means to sense the sizes of all of said documents;

only the documents of a same size are copied while said automatic document feeding device circulates all of the documents once, the documents of the largest size or the smallest size sensed by said document sensing means being first; and

the copying of the documents of a same size is repeated a number of times associated with a number of sizes of documents sensed by said document size sensing means.

5,008,710

PAPER FEEDER OF A LABEL PRINTER

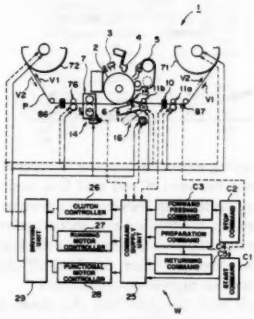
Hitoshi Kobayashi; Akira Takano; Naoharu Narusawa; Yukihiko Tsukada; Hiroshi Sakamoto; Masaki Hirano, and Masao Ando, all of Nagano, Japan, assignors to Nisshinbo Industries, Inc., Tokyo and Nagano Japan Radio Co., Ltd., Nagano, both of, Japan

Filed Apr. 30, 1990, Ser. No. 516,967

Claims priority, application Japan, May 26, 1989, 1-133100; Sep. 7, 1989, 1-232133

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—202 9 Claims



1. A paper feeder of a label printer using an electronic photographic system including a main charger for charging a photosensitive drum, a printing head for applying printing information, a developer for attaching toner, a transfer charger for transferring the toner on the photosensitive drum to label papers affixed on a continuous paper constituting a continuous printing paper and a fixing device for fixing the toner by causing the continuous printing paper to pass through the fixing device, and capable of making printing successively on the label papers, comprising a control device for moving back the continuous printing paper by a length obtained by adding a fixed length capable of continuously making the next printing subsequently to a final printing position of the printing paper upon resumption of the printing operation when the movement of the printing paper is stopped by completion of the printing operation to an adjustment length for settling a printing position.

5,008,711

IMAGE FORMING APPARATUS

Koji Sakamoto, Tokyo; Misao Tanzawa, Kawasaki; Nobuo Iwata, Sagamihara; Hisao Murayama, Kawasaki; Susumu Takahashi, and Kenya Komada, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 19, 1988, Ser. No. 183,707

Claims priority, application Japan, Apr. 23, 1987, 62-98613; May 20, 1987, 62-121191; Oct. 16, 1987, 62-259785

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—206 9 Claims

1. An image forming apparatus including a body, an image carrier removably mounted on said body for carrying an electrostatic latent image thereon, and a plurality of process means for developing the latent image provided on said image carrier to produce a visible image, transferring the visible image to a transfer material, and cleaning said image carrier after the visible image has been transferred, said apparatus comprising:

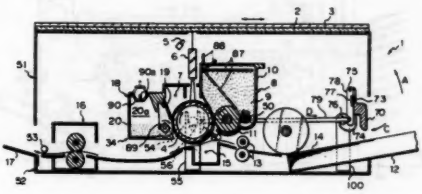
at least one image forming unit having at least one of said process means and removably mounted on said body;

first sensor means for sensing the end of the life of said image forming unit;

second sensor means for sensing the end of the life of said image carrier;

first display means for urging a person to replace said image forming unit when said first sensor means senses the end of the life of said image forming unit; and

second display means for urging a person to replace said



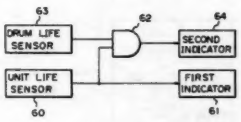


image forming unit and said image carrier when said first sensor means senses the end of the life of said image forming unit after said second sensor means has sensed the end of the life of image carrier.

5,008,712

VARIABLE MAGNIFICATION COPYING APPARATUS AND AUTOMATIC SHUTDOWN THEREFOR

Tsuneki Inuzuka; Katsuyoshi Maeshima, and Masahiro Tomosada, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 940,224, Dec. 8, 1986, abandoned, which is a continuation of Ser. No. 735,387, May 17, 1985, abandoned, which is a continuation of Ser. No. 311,865, Oct. 15, 1981, abandoned. This application Nov. 16, 1989, Ser. No. 436,974

Claims priority, application Japan, Oct. 17, 1980, 55-145268; Oct. 17, 1980, 55-145269; Dec. 27, 1980, 55-188402; Jan. 19, 1981, 56-6946; Jan. 21, 1981, 56-8489

Int. Cl.[5] G03G *15/04, 21/00*

U.S. Cl. 355—206 20 Claims

1. A copier with variable magnification capability, comprising:

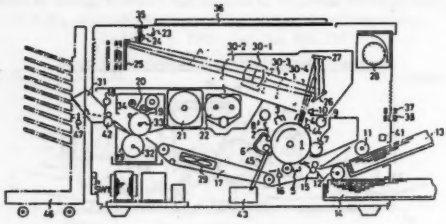
input means for setting a desired image magnification;

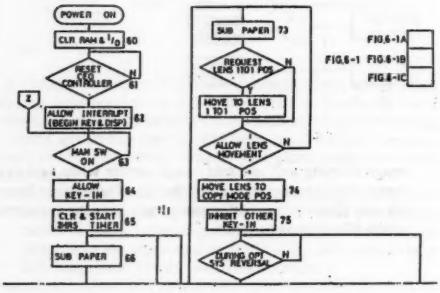
means for displacing an optical system to a determined position in accordance with said input means setting, wherein said position determines the size of a reproduced image;

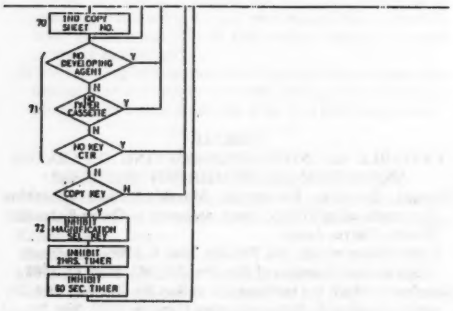
said displacing means having means for detecting a reference position of said optical system and means for detecting the position of said optical system correspondingly to the magnification set by said input means; and

timer means to be started in synchronism with the start of displacement of said optical system or with the entry of a signal for said displacement; wherein an error signal is

generated, when said detection means does not detect the arrival of said optical system at the position corresponding







to the set magnification even after the lapse of the time set by said timer means.

5,008,713

SHEET CONVEYING APPARATUS AND SHEET CONVEYING METHOD

Takashi Ozawa, Ichikawa, and Minoru Nada, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 230,355, Aug. 10, 1988, abandoned. This application Jun. 8, 1990, Ser. No. 535,284

Claims priority, application Japan, Aug. 12, 1987, 62-199960; Jul. 7, 1988, 63-170553

Int. Cl.[5] G03G *15/00*; B65H *3/06*

U.S. Cl. 355—319 **25 Claims**

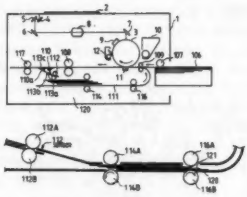
23. An image forming apparatus having:

image forming means for forming an image on one surface of each of sheets;

feeding means for feeding the sheets one by one to said image forming means;

piling means for piling the sheets each having an image formed on one surface thereof by said image forming means with a predetermined amount of deviation in the direction of conveyance therebetween;

first conveying means for nipping the sheets piled with the predetermined amount of deviation therebetween and imparting a conveying force to the lead-off sheet;



second conveying means for nipping the sheets piled by said piling means between it and said first conveying means and conveying them in forward and reverse directions;

control means for controlling said second conveying means and conveying the sheets other than the lead-off sheet in the reverse direction after the lead-off sheet has been released from its nipped condition; and

a conveyance path for directing the sheet to which the conveying force is applied by said first conveying means to said image forming means.

5,008,714

IMAGE FORMING APPARATUS HAVING AN AUTOMATIC DOCUMENT FEED DEVICE FOR AUTOMATICALLY DISCHARGING A MANUALLY POSITIONED DOCUMENT

Kimihiko Higashio, and Yoichi Kawabuchi, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 7, 1988, Ser. No. 254,726

Claims priority, application Japan, Oct. 9, 1987, 62-255918

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—313 **4 Claims**

1. An image duplicating apparatus, comprising:

(a) a transparent document support table,

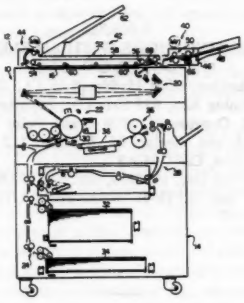
(b) an image forming device for copying images on an original document sheet placed on said document support table,

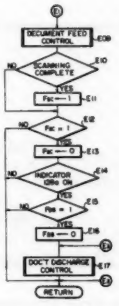
(c) an original document feeding device for conveying an original document sheet to a predetermined position on said document support table and discharging the original document sheet from said predetermined position, said original document feeding device being angularly movable from a closed position confronting said document support table to an angular position allowing manual access to said document support table,

(d) manual input means allowing manual entry of an automatic document discharge instruction for automatically discharging a manually placed original document sheet from said document support table,

(e) a control device responsive to said automatic document discharge instruction for activating said original docu-

ment feeding device to automatically discharge the manually placed original document sheet from said document support table when said original document feeding device is in said closed position.





5,008,715

COPYING MACHINE ALLOWING MANUAL FEED OF COPYING PAPER

Masaru Imaizumi, and Yoshiaki Takano, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 10, 1988, Ser. No. 205,186

Claims priority, application Japan, Jun. 11, 1987, 62-145901; Jul. 20, 1987, 62-181712; Jul. 20, 1987, 62-181713; Jul. 20, 1987, 62-181714

Int. Cl.[5] G03G *21/00*

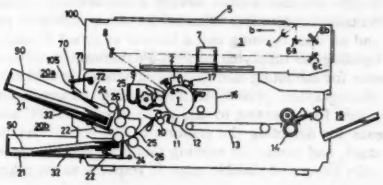
U.S. Cl. 355—313 **16 Claims**

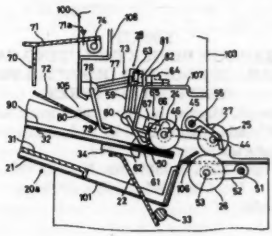
1. A copying machine allowing copying paper to be fed manually, comprising:

an automatic paper feeding section including support means for supporting copying paper to be fed automatically, feed means for feeding the copying paper, and switch means for selectively providing a state in which the copying paper is pressed between said support means and said feed means and a state in which the copying paper is released from a pressing force;

inlet means for receiving copying paper inserted manually and allowing the manually inserted copying paper to advance to a position between said support means and said feed means and to be pressed therebetween by action of said switch means;

means for forming images on the copying paper; and





control means for controlling feeding of the copying paper pressed between the support means and the feed means to the image forming means.

5,008,716

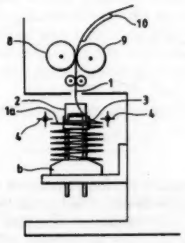
PAPER COOLING APPARATUS FOR AN ELECTROPHOTOGRAPHIC PRINTER

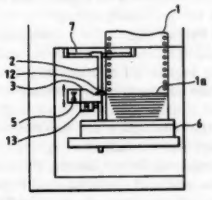
Tsukasa Onose; Yasuo Kikuchi; Toshitaka Ogawa, and Minoru Seino, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1989, Ser. No. 417,621

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—322 **5 Claims**





5. A paper cooling apparatus for an electrophotographic printer in which toner is printed on extending surfaces and folded with the extending surfaces extending horizontally and

with adjacent surfaces in contact, and said printer having a horizontally slidable paper guide comprising:

means for directing cooling air to the folded paper so that the air passes between said adjacent surfaces to cool the paper and prevent toner stick, wherein said directing means includes a duct having a horizontally elongated rectangular opening adjacent the stack of folded papers and an inlet opening and a blower attached to said inlet opening for supplying cooling air thereto;

means for mounting said cooling apparatus to said electrophotographic printer, said mounting means including means for mounting to said guide of said printer; and

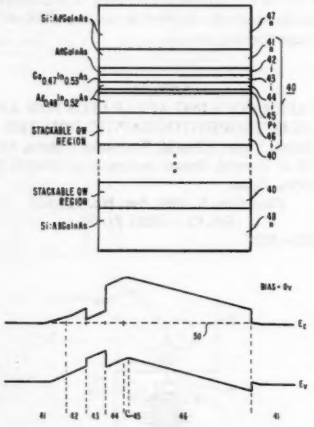
means for detecting the position of the top of the folded stack, and means for moving said duct and blower vertically along said slidable guide in response to the output of said sensor.

5,008,717

SEMICONDUCTOR DEVICE INCLUDING CASCADED MODULATION-DOPED QUANTUM WELL HETEROSTRUCTURES

Israel Bar-Joseph, Highlands; Tao-Yuan Chang, Lincroft, and Daniel S. Chemla, Rumson, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 3, 1989, Ser. No. 322,958
Int. Cl.[5] H01L *29/205, 29/68*
U.S. Cl. 357—16 **9 Claims**



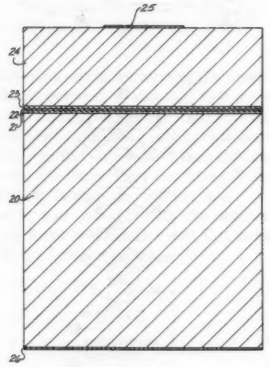
1. A semiconductor device responsive to electrical signals for causing a change to a supplied optical signal comprising at least a first modulation-doped structure including epitaxial regions grown in sequence as follows: a first doped semiconductor region, a quantum well region, said first doped semiconductor region for providing charge carriers to said quantum well region, a barrier region for substantially inhibiting carrier flow from said quantum well region, and a second doped semiconductor region for substantially matching a boundary condition for the conduction and valence bands at an outer end of the second doped semiconductor region to a boundary condition for the conduction and valence bands at an outer end of the first doped semiconductor region, said first and second doped semiconductor layers having substantially similar conductivity types, and said quantum well region having first and second asymmetric barriers wherein the first asymmetric barrier disposed adjacent said first doped semiconductor region has a lower bandgap energy level than the second asymmetric barrier disposed adjacent said second doped semiconductor region, and wherein said barrier region is substantially intrinsic and further includes a third doped semiconductor layer having a conductivity type opposite to the conductivity type of said first and second doped semiconductor regions.

5,008,718

LIGHT-EMITTING DIODE WITH AN ELECTRICALLY CONDUCTIVE WINDOW

Robert M. Fletcher, 1520 Huddersfield Ct., San Jose, Calif. 95126; Chihping Kuo, 915 Erie Cir., Milpitas, Calif. 95035; Timothy D. Osentowski, 2920 Creek Point Dr., San Jose, Calif. 95133, and Virginia M. Robbins, 112 Grenada Ave., Mountain View, Calif. 94043

Filed Dec. 18, 1989, Ser. No. 452,800
Int. Cl.[5] H01L *33/00;* **H01S** *3/19*
U.S. Cl. 357—17 **14 Claims**



1. A light emitting diode comprising:

a semiconductor substrate;

an electrical contact to the substrate;

active p-n junction layers for AlGaInP over the substrate for emitting light;

a transparent window layer of semiconductor different from AlGaInP over the active layers and having a bandgap greater than the bandgap of the active layers and a resistivity lower than the active layers; and

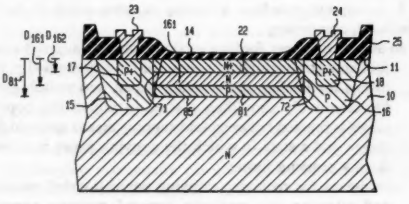
a metal electrical contact over a portion of the transparent layer.

5,008,719

DUAL LAYER SURFACE GATE JFET HAVING ENHANCED GATE-CHANNEL BREAKDOWN VOLTAGE

Gregory A. Schrantz, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Oct. 20, 1989, Ser. No. 424,917
Int. Cl.[5] H01L *29/80*
U.S. Cl. 357—22 **17 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type having a first surface;

first and second semiconductor regions of a second conductivity type, opposite to said first conductivity type, respectively disposed in first and second spaced-apart surface portions of said substrate;

a third, channel, semiconductor region of said second conductivity type, disposed beneath a third surface portion of said substrate and bridging said first and second semiconductor regions; and

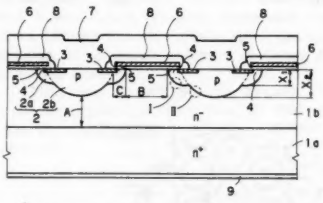
a fourth, gate, semiconductor region of said first conductivity type extending from said third surface portion of said substrate, bridging said first and second semiconductor regions and so as to be contiguous with said third semiconductor region, said fourth region containing a fifth semiconductor region of a first impurity concentration, extending from said third surface portion of said substrate to a sixth semiconductor region of a second impurity concentration, lower than said first impurity concentration, said sixth region being contiguous with said third region and being spaced apart from said third surface portion of said substrate.

5,008,720

SEMICONDUCTOR DEVICE WITH STEPED WELL

Akio Uenishi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1990, Ser. No. 460,007
Claims priority, application Japan, Apr. 21, 1989, 1-102702
Int. Cl.[5] H01L *29/10, 29/34*
U.S. Cl. 357—23.4 **6 Claims**



6. A semiconductor device comprising:

a first conductivity type first semiconductor layer having first and second major surface;

a second conductivity type well region selectively formed in said first major surface of said first semiconductor layer;

a first conductivity type semiconductor region selectively formed in a surface of said well region;

a second conductivity type second semiconductor layer formed on said second major surface of said first semiconductor layer;

an insulation layer formed on a portion of a surface of said well region between surfaces of said first semiconductor layer and said semiconductor region;

a control electrode formed on said insulation layer;

a first main electrode formed on said semiconductor region; and

a second main electrode formed on said second semiconductor layer,

said well region having a steped configuration composed of a peripheral portion of a first depth and a central portion of a second depth deeper than said first depth,

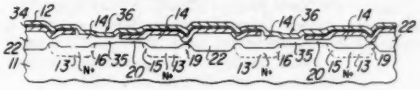
a ratio of said first depth to said second depth ranging from 0.85 to 0.95.

5,008,721

ELECTRICALLY-ERASABLE, ELECTRICALLY-PROGRAMMABLE READ-ONLY MEMORY CELL WITH SELF-ALIGNED TUNNEL

Manzur Gill, Rosharon; Sung-Wei Lin, Houston; C. Rinn Cleavelin, Lubbock, and David J. McElroy, Rosenberg, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 219,529, Jul. 15, 1988, abandoned. This application Mar. 15, 1990, Ser. No. 494,042
Int. Cl.[5] H01L *29/68, 29/34;* **G11C** *11/34*
U.S. Cl. 357—23.5 **22 Claims**



1. An electrically erasable and programmable memory cell formed at a face of a semiconductor layer of a first conductivity type, comprising:

a thick insulator region selectably grown at said face from said semiconductor layer, a lateral margin of said insulator region being sloped with respect to said face, said thick insulator region having a thickness;

first and second source/drain regions implanted into said face with a dopant to be of a second conductivity type opposite said first conductivity type;

an oxide region grown on said first source/drain region, a lateral margin of said oxide region being sloped with respect to said face, said oxide region having a thickness, a junction of said sloped lateral margin of said oxide region and said sloped lateral margin of said thick insulator region creating a thin insulator transition area, at least a portion of said thin transition area adjoining said first source/drain region;

insulator material within said thin insulator transition area etched back to expose said semiconductor layer, a thin tunnel insulator grown on said exposed semiconductor layer within said thin transition area, a width of said thin tunnel insulator between said thick insulator region and said oxide region being independent of said thicknesses of said thick insulator region and said oxide region;

a channel area of said semiconductor layer extending between said first and said second source/drain regions, a floating gate formed over said tunnel insulator and insulatively disposed over at least a portion of said channel area; and

a control gate insulatively disposed adjacent said floating gate.

5,008,722

NON-VOLATILE MEMORY

Agerico L. Esquivel, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 31,329, Mar. 27, 1987, abandoned, which is a division of Ser. No. 844,915, Mar. 27, 1986, abandoned. This application May 31, 1989, Ser. No. 363,366
Int. Cl.[5] H01L *29/68, 29/00, 27.02;* **G11C** *11/34*
U.S. Cl. 357—23.5 **34 Claims**

1. A non-volatile memory cell array comprising:

a semiconductor body;

a plurality of bitline diffusions;

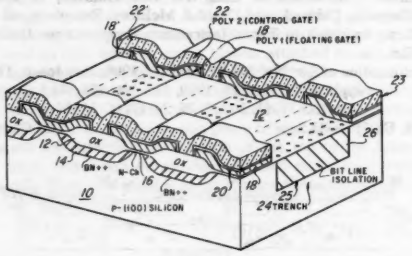
a plurality of wordlines which are not parallel to said bit line diffusions, said plural wordlines being respectively mutually parallel;

a plurality of floating gates underlying said wordlines at locations in between said bitline diffusions;

a plurality of transistor channel locations, each disposed substantially under a floating gate; and

a plurality of isolation trenches, each filled with a dielectric

material and extending into said semicondutor body, each of said trenches disposed between a pair of channel locations which are disposed between the same bitline diffu-



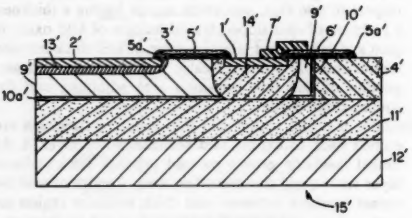
sions and which are associated with adjacent wordlines, said trenches having edges aligned with said floating gates so that said floating gates do not overlap said trenches.

5,008,723

MOS THIN FILM TRANSISTOR

Leonard A. van der Have, Ames, Iowa, assignor to Kopin Corporation, Taunton, Mass.

Filed Dec. 29, 1989, Ser. No. 458,590
Int. Cl.[5] H01L *29/78, 49/02, 27/13*
U.S. Cl. 357—23.7 **12 Claims**



1. In a metal-oxide semiconductor transistor having a drain region, and a source region formed in a crystalline semiconductor body layer provided over a planar surface of a semiconductor substrate wafer, and a gate electrode with a gate oxide beneath said gate electrode, the improvement comprising:

(a) a buried insulator layer formed on the semiconductor body between said crystalline semiconductor body layer and said substrate and covering said planar surface;

(b) said drain region comprising an upper drain region and a lower lightly doped region extending to said insulator layer and the dopant level of the lower region being less than that of the upper region and which is sufficient to cause conversion of the semiconductor body layer in the lower region; and

(c) said source region not extending to said insulator.

5,008,724

SEMICONDUCTOR DEVICE

Koji Shirai, Kawasaki, and Ken Kawamura, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 160,764, Feb. 26, 1988. This application Jul. 3, 1990, Ser. No. 547,361
Claims priority, application Japan, Feb. 27, 1987, 62-44252
Int. Cl.[5] H01L *27/01, 29/06*
U.S. Cl. 357—23.13 **4 Claims**

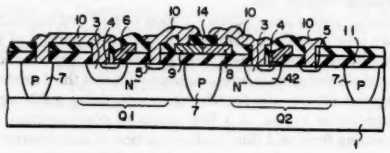
1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

an element isolation-layer of a second conductivity type, said element isolation-layer dividing said semiconductor substrate into first and second parts;

a first field effect transistor formed in the first part of said semiconductor substrate and having a source electrode, a drain electrode, and a gate electrode;

a second field effect transistor formed in the second part of the semiconductor substrate and having a source electrode, a drain electrode and a gate electrode;



an insulation film formed on said semiconductor substrate; and

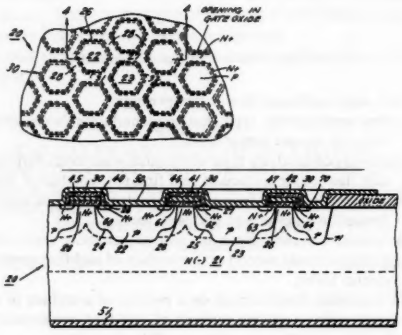
a diode formed on said insulation film and having an anode electrode and a cathode electrode, said anode electrode being connected to said source electrode of said first field effect transistor and said cathode electrode being connected to said drain electrode of said second field effect transistor.

5,008,725

PLURAL POLYGON SOURCE PATTERN FOR MOSFET

Alexander Lidow, Manhattan Beach; Thomas Herman, Redondo Beach, and Vladimir Rumennik, El Segundo, all of Calif., assignors to International Rectifier Corporation, El Segundo, Calif.

Continuation of Ser. No. 243,544, Mar. 13, 1981, abandoned, which is a continuation of Ser. No. 38,662, May 14, 1979, abandoned. This application Dec. 23, 1988, Ser. No. 291,423
Int. Cl.[5] H01L *29/100, 29/780, 29/060, 27/100*
U.S. Cl. 357—23.4 **14 Claims**



1. A high power MOSFET device having more than 1000 parallel-connected individual FET devices closely packed into a relatively small area comprising:

a thin wafer of semiconductor material having first and second spaced, parallel planar surfaces; at least a first portion of the thickness of said wafer which extends from said first planar surface consisting of an epitaxially deposited region of a first conductivity type;

a plurality of symmetrically disposed laterally distributed hexagonal base regions each having a second conductivity

type formed in said epitaxially deposited region and extending for a given depth beneath said first planar surface;

said hexagonal base regions spaced at said first surface from surrounding ones by a symmetric hexagonal lattice of semiconductor material of said first conductivity type;

each side of each of said hexagonal base regions being parallel to an adjacent side of another of said hexagonal base regions;

a hexagonal annular source region of said first conductivity type formed in an outer peripheral region of each of said hexagonal base regions and extending downwardly from said first planar surface to a depth less than the depth of said base regions;

an outer rim of each of said annular source regions being radially inwardly spaced from an outer periphery of its respective hexagonal base region to form an annular channel between each of said outer rims of said annular source regions and said symmetric hexagonal lattice of semiconductor material of said first portion of said wafer;

a common source electrode formed on said first planar surface and connected to a plurality of said annular source regions and to interiorly adjacent surface areas of their said respective hexagonal base regions;

a drain electrode connected to said second planar surface of said wafer;

an insulation layer means on said first planar surface and overlying at least said annular channels; and

a polysilicon gate electrode atop said insulation layer means and operable to invert said annular channels.

5,008,726

PIN JUNCTION PHOTOVOLTAIC ELEMENT WITH P OR N-TYPE SEMICONDUCTOR LAYER COMPRISING NON-SINGLE CRYSTAL MATERIAL CONTAINING ZN, SE, TE, H IN AMOUNT OF 1 TO 4 ATOMIC % AND A DOPAND AND I-TYPE SEMICONDUCTOR LAYER COMPRISING NON-SINGLE CRYSTAL SI(H,F) MATERIAL

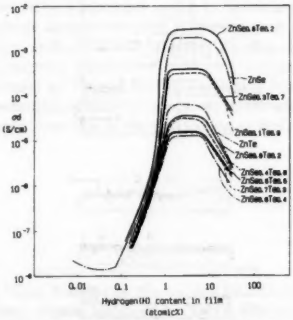
Katsumi Nakagawa, Nagahama; Shunichi Ishihara, Hikone; Masahiro Kanai, Tokyo; Tsutomu Murakami, Nagahama; Kozo Arao, Hikone; Yasushi Fujioka, and Akira Sakai, both of Nagahama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1988, Ser. No. 273,070

Claims priority, application Japan, Nov. 20, 1987, 62-291684

Int. Cl.[5] H01L *27/14, 31/00, 29/18, 29/161*

U.S. Cl. 357—30 **8 Claims**



1. An improved pin junction photovoltaic element which comprises a p-type semiconductor layer, an i-type semiconductor layer and an n-type semiconductor layer being stacked, characterized in that at least one of said p-type semiconductor layer and said n-type semiconductor layer comprises a p-type or n-type film comprised of zinc atoms, selenium atoms, tellurium atoms and hydrogen atoms; the quantitative ratio of said selenium atoms to said tellurium atoms is in the range of from 1:9 to 3:7 in terms of atomic ratio in said film: the amount of said hydrogen atoms in said film is in the range of from 1 to 4 atomic %; said film contains crystal grain domains in a proportion of 65 to 85 vol % per unit volume: and said film contains a dopant of p-type or n-type; and said i-type semiconductor layer comprises a non-single crystal film containing silicon atoms and at least one kind of hydrogen atoms and fluorine atoms.

5,008,727

STANDARD CELL HAVING TEST PAD FOR PROBING AND SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE CONTAINING THE STANDARD CELLS

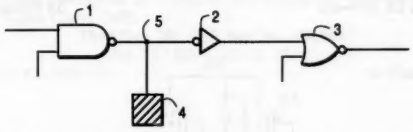
Joji Katsura, Nishinomiya; Yoshiyuki Takagi, Osaka, and Shigeru Watari, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 23, 1989, Ser. No. 299,686

Claims priority, application Japan, Jan. 22, 1988, 63-12924; May 16, 1988, 63-118522; Jun. 21, 1988, 63-153234; Oct. 14, 1988, 63-260045

Int. Cl.[5] H01L *27/02*

U.S. Cl. 357—40 **7 Claims**



1. In a standard cell comprising a plurality of different types of standard cells, a circuit cell containing at least one test pad for probing comprising one of said plurality of standard cells.

5,008,728

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING AN IMPROVED ARRANGEMENT OF POWER SOURCE LINES

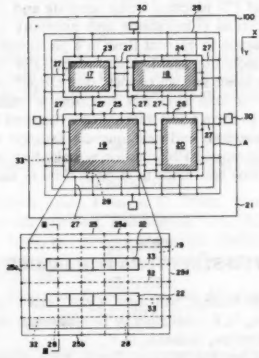
Takeshi Yamamura, Zama; Seiji Endo, Kawasaki; Kazuyuki Kawauchi, Yokohama, and Hiroki Korenaga, Ichikawa, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 14, 1989, Ser. No. 409,553

Claims priority, application Japan, Sep. 19, 1988, 63-234161

Int. Cl.[5] H01L *27/10*

U.S. Cl. 357—45 **19 Claims**



1. A semiconductor integrated circuit device comprising:

a plurality of functional blocks each executing respective logic operations and arranged in an internal area on a semiconductor chip;

a first power source line arranged so as to surround said

internal area and said plurality of functional blocks, said first power source line being a closed-loop line;

second power source lines provided for each functional block of said plurality of functional blocks so as to surround each functional block on said chip, each of said second power source lines being a closed-loop line; and

third power source lines mutually connecting said second power source lines of said functional blocks and connecting said second power source lines and said first power source line, said third power source lines connecting said second power source lines with other second power source lines and said second power source lines with said first power source line at a plurality of portions on said first and second power source lines.

5,008,729

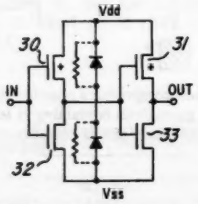
LASER PROGRAMMING OF SEMICONDUCTOR DEVICES USING DIODE MAKE-LINK STRUCTURE

Kendall S. Wills, and Paul A. Rodriguez, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 237,260, Aug. 26, 1988, abandoned, which is a division of Ser. No. 621,837, Jun. 18, 1984, abandoned. This application Sep. 28, 1989, Ser. No. 415,445

Int. Cl.[5] H01L *27/02*

U.S. Cl. 357—51 **18 Claims**



1. An integrated circuit with laser programmable links in a semiconductor body comprising:

(a) a first PN junction formed in a region of said body having a first conductivity type with a programming area within the PN junction for receiving a laser beam, said first PN junction being separate and distinct from other electrical components and normally presenting a high resistance to current flow in a certain direction;

(b) a second PN junction formed in a region of said body having a second conductivity type with a programming area within the PN junction for receiving a laser beam, said second PN junction being separate and distinct from other electrical components and normally presenting a high resistance to current flow in a particular direction;

(c) a circuit including said first and second PN junctions and having an input and an output, said output clamped at a first level if said first PN junction is make-link programmed to form a low resistance to current flow in said certain direction, and said output clamped at a second level if said second PN junction is make-link programmed to form a low resistance to current flow in said particular direction.

5,008,730

CONTACT STUD STRUCTURE FOR SEMICONDUCTOR DEVICES

Hung-Chang W. Huang, San Jose, Calif., and Paul A. Totta, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 252,836, Oct. 3, 1988, abandoned. This application Dec. 18, 1989, Ser. No. 455,790

Int. Cl.[5] H01L *23/48, 29/46, 29/64, 29/34*

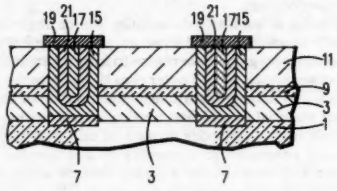
U.S. Cl. 357—68 **20 Claims**

1. A contact stud structure for the connection of semiconductor device components formed in a substrate to the wiring for interconnecting said device components to other device components comprising:

(a) an insulator layer having an etch-stop layer deposited on said substrate, said insulator layer having at least one opening at the location of one of the semiconductor device components formed in said substrate,

(b) a first metal layer deposited in said opening of said insulator layer and lining said opening in said insulator layer,

(c) a second metal layer deposited conformably onto said first metal layer, and



(d) a third metal layer deposited onto said second metal layer, said second and third metal layers being selected from the group of refractory metals with said third metal layer filling said opening in said insulator layer wherein said second and third metal layers are different from each other, and wherein said first metal layer makes a direct physical contact with the wiring for interconnecting said device components.

5,008,731

INTEGRATED SEMICONDUCTOR CIRCUIT WITH DECOUPLED D.C. WIRING

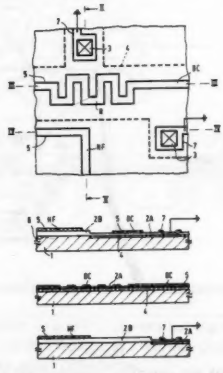
Robert E. J. Van De Grift; Martien Van Der Veen, and André J. Linssen, all of Eindhoven, Netherlands, assignors to U.S. Philip Corp., New York, N.Y.

Continuation of Ser. No. 235,250, Aug. 22, 1988, abandoned. This application Feb. 16, 1990, Ser. No. 483,290

Claims priority, application Netherlands, Aug. 26, 1987, 8701997

Int. Cl.[5] H01L *29/44*

U.S. Cl. 357—71 **7 Claims**



1. A monolithic integrated semiconductor circuit comprising a semiconductor body, a semiconductor region adjoining a surface of said semiconductor body and covered with an electrically insulating layer, the semiconductor region including a plurality of semiconductor circuit elements interconnected by conductor tracks disposed on the insulating layer and comprising the wiring of the circuit, said wiring including means for

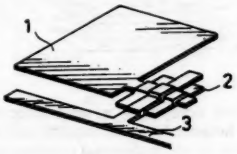
carrying only D.C. information and comprising at least one first conductor track, and said wiring including means for carrying A.C. information and comprising at least one second conductor track, said insulating layer having a first layer portion under only said second conductor track and a second, substantially thinner adjacent layer portion under only said first conductor track and located alongside said first layer portion, said first and second conductor tracks being substantially on different levels, and a connection conductor connected to a part of the semiconductor surface, said second layer portion being located on said part of the semiconductor surface which is connected to said connection conductor.

5,008,732

THIN FILM TWO TERMINAL ELEMENT

Hitoshi Kondo, Machida; Eiichi Ohta, and Yuji Kimura, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 28, 1989, Ser. No. 442,731
Claims priority, application Japan, Dec. 9, 1988, 63-311391
Int. Cl.[5] H01L *23/48, 23/54*
U.S. Cl. 357—71 **4 Claims**



1. A thin film two terminal element, comprising:
an insulating substrate;
a transparent electrode disposed on the insulating substrate;
a lower metallic electrode disposed on the insulating substrate so as to partially overlap the transparent electrode and formed by a metal having a standard electrode potential in an aqueous solution equal to or higher than that of the transparent electrode;
an insulating film disposed on the lower metallic electrode and formed by a hard carbon film including at least one of amorphous and microcrystal properties with carbon and hydrogen atoms as a main structure forming element; and
an upper metallic electrode disposed on the insulating film and formed by a metal having a standard free energy in the production of an oxide at a room temperature equal to or greater than that in the production of H_2O or CO_2.

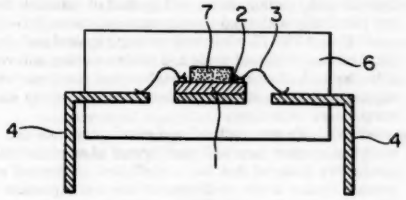
5,008,733

SEMICONDUCTOR DEVICE

Katsutoshi Mine; Yoshitsugu Morita, and Satoshi Miyamae, all of Ichihara, Japan, assignors to Toray Silicone Company, Limited, Tokyo, Japan

Continuation of Ser. No. 629,823, filed as PCT JP83/00405 on Oct. 11, 1983. This application Feb. 26, 1988, Ser. No. 161,164
Feb. 26, 1988, Ser. No. 161,164
Claims priority, application Japan, Oct. 11, 1982, 57-196928
Int. Cl.[5] H01L *23/28, 23/30*
U.S. Cl. 357—72 **15 Claims**

1. A process for forming a semiconductor device having a protective coating which comprises applying a heat-bondable, previously cured silicone to at least a major portion of the



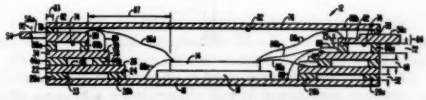
surface of the semiconductor device and heat-bonding the silicone to said surface.

5,008,734

STADIUM-STEPPED PACKAGE FOR AN INTEGRATED CIRCUIT WITH AIR DIELECTRIC

Vivek B. Dutta, Cupertino; Jeffrey C. Demmin, Mt. View; Mark L. DiOrio, and Jon T. Ewanich, both of Cupertino, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 20, 1989, Ser. No. 454,802
Int. Cl.[5] H01L *23/12, 23/48*
U.S. Cl. 357—74 **16 Claims**



1. A package for an integrated circuit component, the component having a plurality of contact pads on its surface, the package comprising:
means for supporting said integrated circuit component;
a first layer, connected to said means for supporting, having at least a first electrically conductive portion;
a second layer with at least a first edge, said second layer having at least a first area which overlies and is spaced from said first layer, said second layer having at least a second electrically conductive portion;
means for providing electrical connection between at least one of said contact pads and at least one of said first electrically conductive portion and said second electrically conductive portion; and
at least a first dielectric material positioned between said first area and said at least part of said first layer, wherein said first dielectric material is a gaseous material.

5,008,735

PACKAGED DIODE FOR HIGH TEMPERATURE OPERATION

John A. Edmond, Apex; Douglas G. Waltz, Durham, both of N.C.; Muni M. Mitchell, Huntington, N.Y.; Mohammad Sedigh, New York, and Roman Hamerski, Smithtown, both of N.Y., assignors to General Instrument Corporation, N.Y. and Cree Research, Inc., N.C.

Filed Dec. 7, 1989, Ser. No. 447,213
Int. Cl.[5] H01L *23/02*
U.S. Cl. 357—74 **29 Claims**

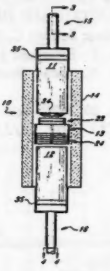
1. A packaged diode suitable for operation at temperatures about 200° C. and during temperature excursions between −65° C. and at least 350° C., the packaged diode comprising:
a diode formed of silicon carbide and having respective p and n portions with a p-n junction therebetween, and that is stable and that will exhibit satisfactory diode character-

istics at temperatures greater than 200° C. and over temperature excursions between −65° C. and 350° C.;

ohmic contacts to opposite sides of said junction diode for making electrical contact to the respective p and n portions of said junction diode, and formed of materials that can physically withstand temperature excursions between −65° C. and 350° C. while maintaining physical and electrical contact with said diode and while avoiding unfavorable physical, chemical and metallurgical reactions with adjacent materials at such temperatures and during such temperature excursions;

an electrode adjacent each of said ohmic contacts and in electrical contact therewith and formed of an electrically conductive material that has a coefficient of thermal expansion similar to the coefficient of thermal expansion of silicon carbide for providing structural support to said junction diode and electrical contact with said junction diode;

a lead to each of said electrodes and in contact therewith opposite each said electrode's contact with said diode,



each said lead being formed of an electrically conductive material and joined to said electrode by a brazing alloy that comprises an alloy of gold and nickel in which the amount of gold present by weight is greater than the amount of nickel present by weight by an amount sufficient for said alloy to remain malleable and maintain an integral joint between said electrodes and said leads when said electrodes and said leads have thermal coefficients of linear expansion that differ substantially from one another when said electrodes and leads are subjected to repeated thermal excursions between temperatures of about −65° C. to 350° C. or greater; and

a glass package surrounding said diode and at least portions of said electrodes for maintaining said electrodes in physical and electrical contact with said ohmic contacts, said package being formed of a glass that has a coefficient of expansion similar enough to the coefficient of expansion of said electrode material for the resulting packaged diode to remain integral when subjected to repeated thermal excursions between temperatures of about −65° C. to 350° C. or greater.

5,008,736

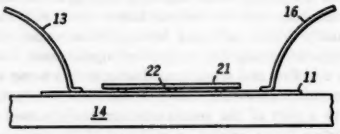
THERMAL PROTECTION METHOD FOR A POWER DEVICE

Robert B. Davies, and Robert B. Jarrett, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 20, 1989, Ser. No. 438,382
Int. Cl.[5] H01L *23/36*
U.S. Cl. 357—75 **11 Claims**

1. A thermally protected switch comprising:

a first chip having the switch formed thereon and having an electrode wherein the switch is on when a control signal is present on the electrode; and a second chip having control circuitry formed on a top side, the control circuitry further comprising a temperature sensitive portion, a means for shunting the control signal from the electrode when the temperature sensitive portion is a predetermined temperature, and a means for thermally coupling the first chip to the temperature sensitive portion of the control circuitry, wherein the means for thermally coupling is



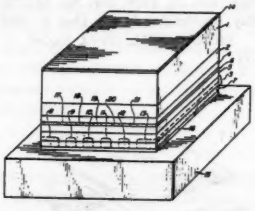
located over a primary heat generation point of the first chip and the second chip is mounted on the first chip so that active areas of the two chips face each other.

5,008,737

DIAMOND COMPOSITE HEAT SINK FOR USE WITH SEMICONDUCTOR DEVICES

Robert D. Burnham, Wheaton, and Ricardo S. Sussmann, Naperville, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Oct. 11, 1988, Ser. No. 255,259
Int. Cl.[5] H01L *23/36*
U.S. Cl. 357—81 **16 Claims**



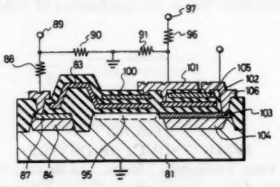
1. A structure comprising a semiconductor in thermal contact with a heat-conductive composite which is comprised of a metal matrix in which diamond particles have been thoroughly mixed and embedded wherein the proportions of said diamond particles and said metal are selected to form a composite having a coefficient of thermal expansion which is substantially the same as that of said semiconductor, and wherein said diamond particles have a largest dimension which is smaller than about 3 μm.

5,008,738

SEMICONDUCTOR VARIABLE CAPACITANCE ELEMENT

Yoshio Hattori, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Nov. 9, 1988, Ser. No. 269,435
Claims priority, application Japan, Nov. 11, 1987, 62-284862
Int. Cl.[5] H01L *29/78, 29/68, 29/92*
U.S. Cl. 357—23.6 **15 Claims**



1. A semiconductor variable capacitance element electrically connectable to an external circuit, comprising:

a semiconductor substrate having a major surface and a capacitive region under the major surface of the semiconductor substrate;

an insulating film disposed on the major surface of the semiconductor substrate;

a floating electrode disposed on the insulating film and electrically insulated from the semiconductor substrate

through the insulating film for storing electric charge to build up an electrical potential in the floating electrode according to the stored amount of electric charge to thereby determine the amount of capacitance of the capacitive region;

a charge control electrode formed in the semiconductor substrate for injecting electric charge into the floating electrode;

a first capacitance electrode electrically insulated from the semiconductor substrate through the insulating film and capacitively coupled to the floating electrode;

blocking means for blocking an application of a DC voltage from the external circuit between the first capacitance electrode and the capacitive region; and

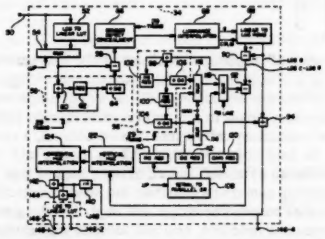
bias means for applying a bias voltage between the capacitive region and the first capacitance electrode.

5,008,739

REAL-TIME DIGITAL PROCESSOR FOR PRODUCING FULL RESOLUTION COLOR SIGNALS FROM A MULTI-COLOR IMAGE SENSOR

Lionel J. D'Luna; Robert H. Hibbard, and Kenneth A. Parulski, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 13, 1989, Ser. No. 310,419
Int. Cl.[5] H04N *9/07, 9/04*
U.S. Cl. 358—21 R **9 Claims**



1. A digital circuit for generating a fully interpolated color signal from a single, multi-color image sensor having a two-dimensional pattern of photosites producing luminance and chrominance image signals corresponding to discrete, and respectively separate, pixel locations, said circuit comprising:

(a) a first digital processing section for operating upon signals that are linearly related to the sensor signal level; said first section including:

a black reference clamp for establishing a black reference value from the average black signal value of a predetermined number of pixels on the image sensor;

means for subtracting the black reference value from each image signal;

means for replacing image signals obtained from defective pixels with image signals from nearby pixels of the same color; and

means for interpolating additional luminance values for the pixel locations that produce chrominance signals, said interpolating means combining the signal values of nearby luminance pixels according to a predetermined algorithm, said interpolating means providing therefrom a fully interpolated stream of luminance signals and an uninterpolated stream of chrominance signals; and

(b) a second digital processing section for operating upon signals that are logarithmically related to the sensor signal level, said second section including:

means for generating logarithmic luminance and chrominance signals from the fully interpolated luminance image signals and from the uninterpolated chrominance image signals;

means for generating a log hue signal from the log chrominance and log luminance signals;

means operating upon the log hue signal for controlling white balance according to an offset value subtracted from the log hue signal;

means operating upon the log luminance image signal to modify signal gain according to a gain offset value input to the second processing section;

means for interpolating additional hue values for the pixel locations that produce luminance signals, said hue interpolating means combining the hue signal values of nearby chrominance pixel locations according to a predetermined algorithm; and

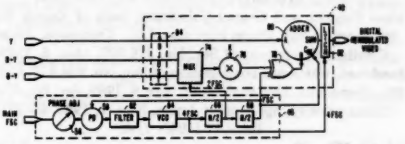
means for generating a fully interpolated color signal from said interpolated hue and luminance image signals.

5,008,740

APPARATUS AND METHOD FOR CREATING DIGITALLY REMODULATED VIDEO FROM DIGITLS COMPONENTS

Larry G. Phillips; Edwin R. Meyer, and David C. Greene, all of Knoxville, Tenn., assignors to North American Philips Corp., New York, N.Y.

Filed Apr. 14, 1989, Ser. No. 339,044
Int. Cl.[5] H04N *9/65*
U.S. Cl. 358—23 **18 Claims**



1. An encoder for remodulating digital video luminance (Y) and color difference components (R−Y, B−Y), comprising:

(a) converting means for converting said digital color difference components into two's complement format;

(b) means for conducting a digital quadrature modulation on said digital color difference to effectively provide quadrature modulated signals R−Y, B−Y, −(R−Y), and −(B−Y) in a desired repeating sequence;

(c) addition means for digitally adding said luminance signal to said digital quadrature modulated signals, the sum of said luminance and quadrature modulated color difference color difference signals providing a digital remodulated video signal suitable for conversion into an analog remodulated video signal; and

(d) said means for conducting a digital quadrature modulation comprising a first clock signal having high and low polarities, an exclusive OR gate means coupled to said two's complement format color difference components and to said first clock signal for passing said two's complement color difference component when said first clock signal is of low polarity, and for inverting the bits of said two's complement color difference component when said first color signal is of high polarity, and said means for conducting a digital quadrature modulation further comprising an adding means coupled to an output of said exclusive OR gate means and to said first clock signal for adding said first clock signal to the output of said exclusive OR gate means.

5,008,741

METHOD AND APPARATUS FOR PROCESSING COMPONENT SIGNALS TO PRESERVE HIGH FREQUENCY INTENSITY INFORMATION

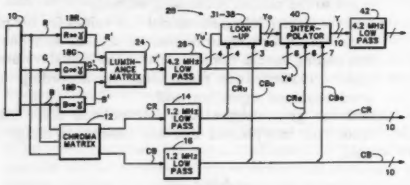
David L. Knierim, Wilsonville, and Gary L. Brown, Lake Oswego, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 7, 1989, Ser. No. 334,829
Int. Cl.[5] H04N *9/64, 11/14*
U.S. Cl. 358—32 **26 Claims**

1. A method of processing a video signal in component form, comprising:

(a) generating two chroma component signals which have a selected bandwidth and are GAMMA corrected,

(b) generating a linear luminance component signal which has a greater bandwidth than the chroma component signals and is not GAMMA corrected, and



(c) GAMMA correcting the linear luminance component signal by combining the linear luminance component signal and the chroma component signals to provide a GAMMA-corrected luminance component signal having a greater bandwidth than the GAMMA-corrected chroma component signals.

5,008,742

DOT SIGNAL CONVERSION METHOD

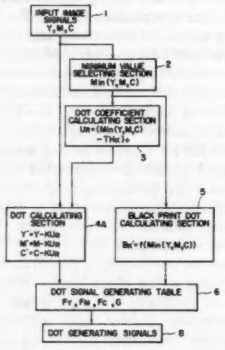
Takao Shigaki, and Osamu Shimazaki, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 319,907, Mar. 6, 1989, abandoned, which is a continuation of Ser. No. 924,817, Oct. 30, 1986, abandoned. This application Nov. 9, 1989, Ser. No. 433,442

Claims priority, application Japan, Nov. 9, 1985, 60-251572

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—79 **5 Claims**


INPUT IMAGE SIGNALS Y,M,C
MINIMUM VALUE SELECTING SECTION Min(Y,M,C)
DOT COEFFICIENT CALCULATING SECTION
DOT CALCULATING SECTION
BLACK PRINT DOT CALCULATING SECTION
DOT SIGNAL GENERATING TABLE Fy, Fm, Fc, G
DOT GENERATING SIGNALS

1. A dot signal conversion method comprising the steps of:

reading a color original for three color separation by an image input device to obtain density signals of respective colors;

converting the density signals of respective colors from the image input device into equivalent neutral density signals and then into dot signals, wherein said dot signals include dot percentages for color specimens, and wherein said neutral density signals are color-processed according to a predetermined formula and then converted to said dot signals by using dot signal generating tables, and

feeding the dot signals into an image output device, said image output device having been used to prepare Y, M, C, and black color specimens in accordance with input test dot signals, whereby said Y, M, and C color specimens generate gray when the input dot signals are input to said output device so as to make color separation films Y, M and C of which dot percentages are changed, and Y, M and C printing plates are made based upon said color separation films and printing is performed by overlapping said Y, M and C printing plates, wherein said dot signal generating tables are prepared for each color Y, M, C, and black from the relationship between the visual density and dot percentage of each Y, M, C and black color specimen prepared in accordance with the input test dot signals.

5,008,743

TELECENTRIC IMAGING SYSTEM OPTICAL INSPECTION MACHINE USING THE SAME AND METHOD FOR CORRECTING OPTICAL DISTORTION PRODUCED THEREBY

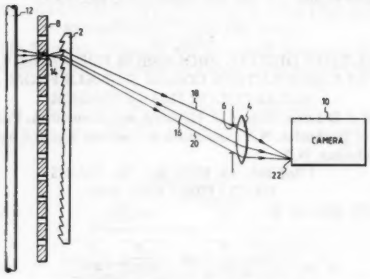
Yigal Katzir, Holon, and Joseph Kochba, Yavne, both of Israel, assignors to Orbot Systems Ltd., Yavne, Israel

Filed Mar. 17, 1989, Ser. No. 324,716

Claims priority, application Israel, Mar. 24, 1988, 85862

Int. Cl.[5] H04N *7/18*

U.S. Cl. 358—101 **10 Claims**



4. An optical inspection machine of the line-scanning type employing a telecentric imaging system, comprising a column capable of translatory movement, an object stage capable of translatory movement in a direction substantially perpendicular to the translatory movement of said column, a transparent window on said object stage, means to mount said object on said window an extended source of light behind said window, a line-scanning camera mounted on the head of said column, an objective lens adapted to image said object on the sensor plane of said camera, a field lens, optically coaxial with said objective lens and located in proximity to said object to be imaged and an aperture stop for said field lens, wherein said field lens is a Fresnel lens, said aperture stop is located at the back focal point of said Fresnel lens and is constituted by the entrance pupil of said imaging objective, whereby the system objective/field lens is rendered telecentric.

5,008,744

METHOD AND APPARATUS FOR PICTURE MOTION MEASUREMENT USING PICTURE CORRELATION AS A FUNCTION OF DISPLACEMENT

Gerard M. X. Fernando, Croydon, England, and Aldo Giardina, Geneva, Switzerland, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 2, 1989, Ser. No. 388,421

Claims priority, application United Kingdom, Sep. 5, 1988, 8820837

Int. Cl.[5] H04N *7/12*

U.S. Cl. 358—105 **5 Claims**

1. A method of picture motion measurement comprising correlating two pictures to determine correlation as a function of displacement thereby to determine one or more peak correlation values corresponding to respective motion vectors, said method being characterized by the steps of:-

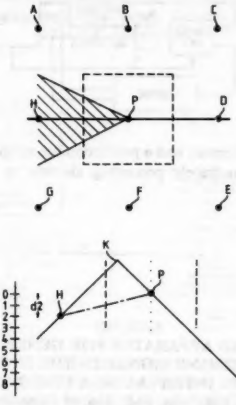
(i) locating a sample point of maximum correlation value in said correlation function associated with a peak correlation value,

(ii) determining from the sample points immediately surrounding said point of maximum value a second sample point which is associated with the steepest gradient between said surrounding and said maximum value sample points,

(iii) determining the difference (d1) in magnitude between

that of said maximum sample point and that of said second sample point, or other quantity proportional thereto,

(iv) determining the difference (d2) in magnitude between that of said maximum sample point and that of a third of said surrounding sample points which is colinear with said maximum and said second sample point but remote from



said second sample point or other quantity proportional thereto, and

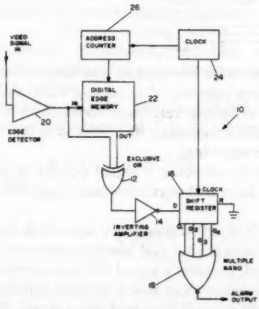
(v) comparing the results produced by steps (iii) and (iv) to determine the location of said peak correlation value associated with said sample point of maximum correlation value to an accuracy better than the interval between adjacent sample points.

5,008,745

CLOCK SYNCHRONIZED DIGITAL TV MOTION DETECTOR

Jon S. Willoughby, Oxford, Pa., assignor to Burle Technologies, Inc., Wilmington, Del.

Filed Dec. 21, 1989, Ser. No. 454,179
Int. Cl.[5] H04N 7/18
U.S. Cl. 358—105 **4 Claims**



1. In a TV motion detector circuit of the type which includes an edge detector circuit receiving and processing a TV video signal, with an edge detector circuit output connected to and feeding an output signal to a digital edge memory which stores the edge detector circuit output signal for a selected number of TV sweep cycles before producing an output signal representing the edge detector circuit output signal on digital edge memory output, with the digital edge memory connected to and driven by an address counter, and with the address counter connected to and driven by a clock signal source, the improvement comprising:

an EXCLUSIVE OR circuit with two inputs and an output, with a first input interconnected with the output of the edge detector circuit and the second input interconnected with the output of the digital edge memory;

a shift register with a signal input, a clock input, and at least two outputs, the clock input interconnected with the clock signal source, and the signal input interconnected with the output of the EXCLUSIVE OR circuit; and

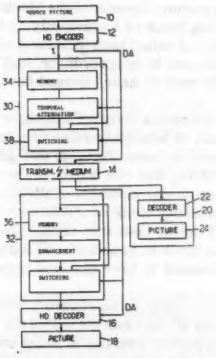
a multiple input circuit which produces an alarm output signal when all its inputs have the same input signal, with each of its inputs interconnected with an output of the shift register.

5,008,746

HIGH DEFINITION TELEVISION SIGNAL PROCESSING INCLUDING SUBSAMPLING AND MOTION COMPENSATION

Philippe Bernard, and Marie-Jean Colaitis, both of Cesson Sevigne Cedex, France, assignors to Centre National d'Etudes des Telecommunications, Paris, France

Filed Jun. 16, 1989, Ser. No. 366,884
Claims priority, application France, Jun. 16, 1988, 88 08096
Int. Cl.[5] A04N 7/12
U.S. Cl. 358—133 **9 Claims**



1. A method of broadcasting high definition television programs over a channel having a narrow bandwidth, comprising:

subjecting a signal resulting from analysis of a source picture to spatio-temporal subsampling and to non-linear movement compensation filtering, and transmitting the points representing a same picture frame as signals over at least two successive transmission fields (t1, t2); and transmitting, along with said signals, assistance data (DA) defining a field of motion vectors,

further comprising, for improving a compatible picture displayed by a receiver devoid of means for the assistance data, subjecting each of the transmission fields other than the first transmission field (t1) corresponding to a same analyzed source frame to a predetermined time attenuation in the direction of motion of picture areas having a high time activity so as to give rise to a modified transmission field (t'2), the degree of said attenuation being selected responsive to the respective motion vector and leading to assigning, to each point of said areas, a position intermediate between its position in the analyzed source frame and its position anticipated in the direction of motion.

5,008,747

SIGNAL CODING

Michael D. Carr, and Anthony R. Leaning, both of Ipswich, England, assignors to British Telecommunications public limited company, United Kingdom

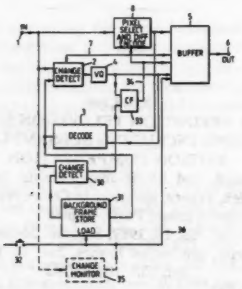
PCT No. PCT/GB88/00871, § 371 Date Jun. 2, 1989, § 102(e) Date Jun. 2, 1989, PCT Pub. No. WO89/04101, PCT Pub. Date May 5, 1989

PCT Filed Oct. 17, 1988, Ser. No. 364,442

Claims priority, application United Kingdom, Oct. 19, 1987, 8724789

Int. Cl.[5] H04N 7/13

U.S. Cl. 358—136 10 Claims



1. A method of coding an image comprising, for each of a plurality of blocks of an image:

(i) comparing picture elements of the block with those of the corresponding block of a previously coded image to produce a matrix of values each indicating whether the corresponding element is, in accordance with a predetermined criterion, deemed to have changed between the two images;

(ii) matching the matrix to one of a predetermined set of such matrices each of which identifies a region of the block as being deemed to have changed, and generating a codeword identifying that one matrix of the set;

(iii) comparing picture elements of the block with those of the corresponding block of a reference image composed of blocks from at least one earlier frame to determine whether the block is, in accordance with a predetermined criterion, deemed to have changed between the two images;

(iv) coding for output those elements within the identified region, unless all the elements within the region are identified by comparison step (iii) as being unchanged relative to the reference image, whereupon a codeword indicating this is generated.

5,008,748

SIGNAL CODING

Michael D. Carr; Maurice G. Perini; John O'Donnell; Anthony B. Leaning, and Anthony R. Leaning, all of Ipswich, England, assignors to British Telecommunications public limited company, United Kingdom

PCT No. PCT/GB88/00709, § 371 Date Jun. 2, 1989, § 102(e) Date Jun. 2, 1989, PCT Pub. No. WO89/02206, PCT Pub. Date Mar. 9, 1989

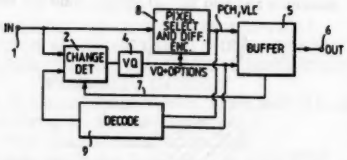
PCT Filed Aug. 26, 1988, Ser. No. 364,441

Claims priority, application United Kingdom, Aug. 28, 1987, 8720390; Oct. 19, 1987, 8724790

Int. Cl.[5] H04N 7/13

U.S. Cl. 358—136 12 Claims

1. A method of coding an image comprising, for the image area or for each of a plurality of individual areas thereof, selecting that one of a plurality of possible sequences of the picture elements within the area which has the highest correlation between successive elements in the sequence, and supplying representations of those elements to an output; wherein some of the representations are the differences between values



of the relevant element and a prediction based on the value of at least the immediately preceding element in the selected sequence.

5,008,749

METHOD AND APPARATUS FOR GENERATING AN AUXILIARY TIMING SIGNAL IN THE HORIZONTAL BLANKING INTERVAL OF A VIDEO SIGNAL

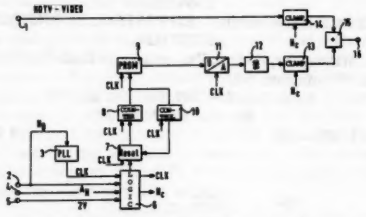
Holger Ruckert, Reinheim, Fed. Rep. of Germany, assignor to BTS Broadcast Television Systems GmbH, Darmstadt, Fed. Rep. of Germany

Filed Mar. 2, 1990, Ser. No. 487,533

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1989, 3909845; Mar. 25, 1989, 3909847

Int. Cl.[5] H04N 7/04, 5/06

U.S. Cl. 358—147 13 Claims



10. Apparatus for inserting an auxiliary signal into the horizontal blanking intervals of an analog video signal, said auxiliary signal including reference oscillations at a frequency locked to a clock frequency itself locked to the horizontal scan frequency, comprising:

means (3) for deriving a signal (CLK) of said clock frequency from said horizontal scan frequency of said video signal;

means (6, 7, 8, 10) activated by said clock frequency signal (CLK) only during said blanking intervals, responsive to said clock frequency signal (CLK), a horizontal blanking interval signal (A_H) and a vertical synchronizing signal (2V) both derived from said video signal, for producing a sequence of address signals in each of said horizontal blanking intervals;

read only memory means (9) responsive to said address signals for generating a digital signal representative of said auxiliary signal;

means (11) for converting said digital signal representative of said auxiliary signal into an analog signal;

means (12) for low-pass filtering said analog signal to produce said auxiliary signal, and

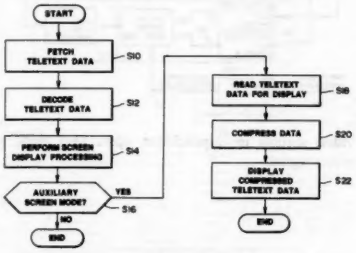
means (15) for inserting said auxiliary signal into the horizontal blanking intervals of said analog video signal.

5,008,750

TELEVISION RECEIVER WITH TELETEXT RECEIVING FUNCTION AND METHOD OF SUPERIMPOSING TELETEXT PICTURE ON TELEVISION PICTURE

Takao Gomikawa, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 28, 1990, Ser. No. 486,232
Claims priority, application Japan, Feb. 28, 1989, 1-49037
Int. Cl.[5] H04N 7/087
U.S. Cl. 358—147 **10 Claims**



10. A method for superimposing a teletext picture on a television picture, comprising the steps of:

receiving television broadcast signals including teletext data

detecting video signals from said received signals;

displaying the video signals detected by said detecting step;

extracting said teletext data from said

detected video signals;

temporarily storing said extracted teletext data;

dividing the stored teletext data for one picture into block data corresponding to picture blocks of a predetermined size and judging the densities of the respective blocks with the two blocks adjacent in the horizontal direction of each of said respective block as a unit;

selecting any one of a plurality of compressing means for compressing said block data by different rules; and

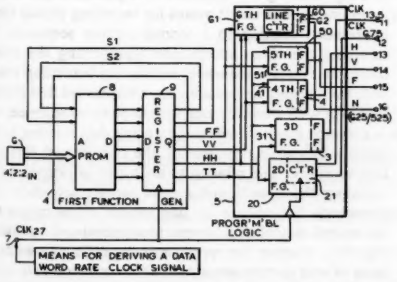
displaying as an auxiliary picture the teletext data compressed by the selected compressing means.

5,008,751

APPARATUS SYSTEM FOR DERIVING SYNCHRONIZING INFORMATION FROM A DIGITAL VIDEO SIGNAL

Gerhard Wischermann, Weiterstadt, Fed. Rep. of Germany, assignor to BTS Broadcast Television Systems GmbH, Darmstadt, Fed. Rep. of Germany

Filed Feb. 8, 1990, Ser. No. 477,293
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1989, 3905669
Int. Cl.[5] H04N 5/04
U.S. Cl. 358—148 **18 Claims**



1. Apparatus system for deriving synchronizing information from a digital video signal containing said synchronizing information in sync words, the arrival of each of which is announced by a preceding data word preamble of predetermined content, said system comprising:

means for deriving a data word rate clock signal (CLK_{27}) from said video signal;

a clocked first function generator (4), having a clock input connected to said means for deriving said clock signal, for clocking of said function generator thereby, and having a video signal input and a multi-bit output;

means for supplying said video signal ($4{:}2{:}2_{IN}$) to said video signal input of said function generator,

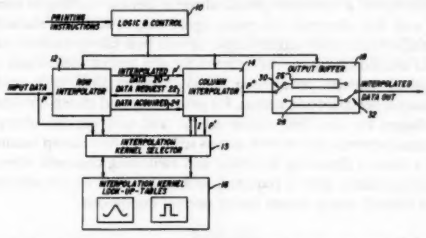
said function generator having an internally stored program for producing at respective bit outputs of said multi-bit output, in response to said video signal, the contents of the bit places of said sync words of said video signal containing synchronizing information (FF, VV, HH) and an additional one-bit signal (TT) which designates when a sync word is present.

5,008,752

DIGITAL IMAGE INTERPOLATOR WITH MULTIPLE INTERPOLATION ALGORITHMS

Lance Van Nostrand, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 16, 1989, Ser. No. 368,458
Int. Cl.[5] H04N 5/14
U.S. Cl. 358—160 **4 Claims**



1. Apparatus for performing interpolation on an input digital image signal having pixel values representing rows and columns of pixels, to produce an interpolated digital image that has more (magnified) or fewer (reduced) pixels, comprising:

a. an interpolation kernel lookup table containing first and second interpolation kernel coefficients;

b. row interpolator means for receiving the input digital image signal, and interpolating in row direction, by retrieving interpolation coefficient values from the interpolation kernel lookup table, and applying the coefficient values to a subset of pixel values in a row to produce interpolated pixel values;

c. column interpolator means for receiving rows of interpolated pixel values from the row interpolator means and preforming interpolation in a column direction by retrieving interpolation coefficient values from the interpolation lookup table, and applying the coefficient values to subsets of pixel values in a column; and

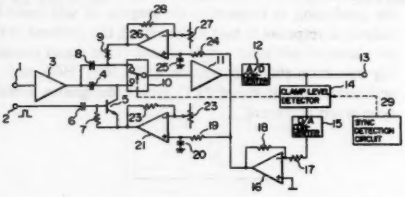
d. interpolation selection means for receiving the input digital image signal input to the row interpolator means, and in response thereto, for selecting said first or second interpolation kernel for row interpolation, and for receiving the interpolated signal values from the row interpolation means, and in response thereto, for selecting said first or second interpolation kernel for column interpolation.

5,008,753

CLAMP SYSTEM USED FOR TELEVISION SIGNAL

Hiromu Kitaura, Osakasayama; Mitsuo Isobe, Osaka; Isao Kawahara, Hirakata; Yoshio Hirauchi, Osaka; Yuichi Ninomiya; Yoshimichi Ohtsuka, both of Kawasaki, and Yoshinori Izumi, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Osaka and Nippon Hoso Kyokai, Tokyo, both of, Japan

Filed Feb. 23, 1989, Ser. No. 314,090
Int. Cl.[5] H04N 5/18
U.S. Cl. 358—171 7 Claims



1. A television signal clamp system comprising: a first clamp means for clamping an input television signal once every N horizontal blanking periods by a clamp pulse to a an externally supplied clamp control voltage to provide a first clamped television signal output, N being a positive integer of one or more, a second clamp means for controlling a DC potential of said input television signal by adding an externally applied clamp control voltage to the input television signal to provide a second clamped television signal output, a switch means for selecting one of said first clamp means and said second clamp means, a clamp level detection means for detecting a DC potential of a reference potential signal period existing in one of said first clamped television signal output and said second clamped television signal output of said first clamp means and said second clamp means selected by said switch means and a control voltage production means, cooperating with said clamp level detection means, for producing said clamp control voltages for the first clamp means and said second clamp means, wherein said switch means selects the first clamp means at a time of throwing in power and switching channels when prompt clamp start is required, and said switch means selects the second clamp means under normal conditions.

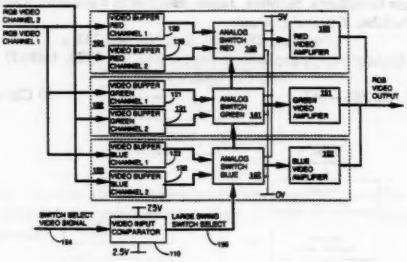
5,008,754

ANALOG CONTROLLED MIXER

Neil F. Trevett, Kingston upon Thames, and Malcolm E. Wilson, Bridport, both of England, assignors to Du Pont Pixel Systems, Limited, United Kingdom

Filed Mar. 22, 1989, Ser. No. 327,242
Claims priority, application United Kingdom, Mar. 23, 1988, 8806881
Int. Cl.[5] H04N 5/265, 5/272
U.S. Cl. 358—183 20 Claims

1. A video signal mixer, comprising:
(a) first and second generator means for providing first and second analog video signals containing first and second video data, respectively;
(b) third generator means for providing a third analog video signal containing third video data which can vary, at video data rate, independently of said first and second video data; and
(c) analog switch means having:
(i) first and second inputs for receiving said first and second analog video signals, respectively;
(ii) a third switch select input for receiving said third analog video signal; and
(iii) an output providing an output signal, said output signal being selected from said first and second analog video signals in dependence upon said third analog video signal.

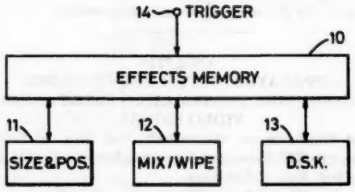


5,008,755

DIGITAL VIDEO SPECIAL EFFECT SYSTEM

Adrian R. Brain, Reading, England, assignor to Abekas Video Systems Ltd., United Kingdom

Filed Apr. 12, 1990, Ser. No. 508,263
Claims priority, application United Kingdom, Apr. 21, 1989, 8909079
Int. Cl.[5] H04N 5/262
U.S. Cl. 358—183 2 Claims

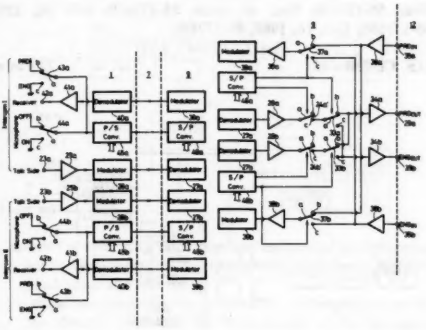


1. A digital special effect system, including:
(a) a first special effect means for receiving digital video information relating to a first picture sequence and for implementing transitions so as to provide video information representing a transitioned first picture sequence;
(b) a second special effedt means for receiving digital video information relating to a second picture sequence, for receiving the video information representing the transitioned first picture sequence, and for implementing transitions for merging or replacing the transitioned first picture sequence with a transitioned second picture sequence; and
(c) a common memory means for storing data relating to the video information representing the transitioned first picture sequence, data relating to the video information representing the transitioned second picture sequence, and commands for causing the first special effect means and the second special effect means to cooperate on a common time-line, wherein the system automatically adjusts durations of said picture sequences, in accordance with input data relating to said merging or replacing, to produce a required total effect.

5,008,756
VIDEO CAMERA SYSTEM WITH AUDIO SWITCHING CIRCUIT

Takashi Nakamura; Yoshimi Yasukochi; Tamotsu Munakata, and Masaharu Nakashima, all of c/o Sony Corporation, 7±, Kitashinagawa 6-chome, Shinagawa-Ku, Tokyo, Japan

Filed Apr. 17, 1990, Ser. No. 509,761
Claims priority, application Japan, Apr. 21, 1989, 1-P102091; Apr. 25, 1989, 1-P105076
Int. Cl.[5] H04N *5/30*
U.S. Cl. 358—210 **5 Claims**



1. A video camera system comprising:

a camera head unit having imager means for generating a video signal and a microphone for generating an audio signal;

a camera control unit for controlling said camera head unit;

connecting means for connecting said camera head unit and said camera control unit and for transmitting said video signal of said imager means and said audio signal of said microphone in said camera head unit to said camera control unit;

output means for outputting said audio signal from said camera control unit;

switching means provided within said camera control unit for selectively permitting said output means to output said audio signal transmitted from said microphone; and

control means provided within said camera head unit for controlling said switching means.

5,008,757
ELECTRONIC STILL CAMERA

Keita Kimura, Kawasaki, and Tetsuya Yamamoto, Hasuda, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 14, 1989, Ser. No. 393,131
Claims priority, application Japan, Aug. 24, 1988, 63-210072
Int. Cl.[5] H04N *3/14, 5/335, 5/238, 5/225*
U.S. Cl. 358—213.13 **6 Claims**

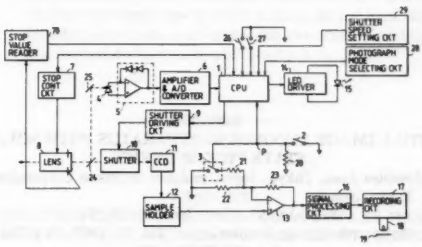
1. An electronic still camera, comprising:

photoelectric converter means for converting light from an object into an electrical signal;

amplifying-recording means for amplifying said electrical signal and for recording the amplified signal on a recording medium;

selecting means for selecting one of plural amplification gains so that said amplifying-recording means amplifies said electrical signal on the basis on the selected amplification gain;

calculating means for calculating an exposure time for said photoelectric converter means in accordance with the



selected amplification gain and the luminance of an object to be photographed;

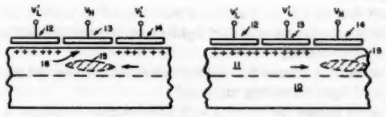
determining means for determining a longest permissible exposure time, irrespective of the luminance of an object to be photographed, in accordance with the selected amplification gain; and

alarm means for detecting that the calculated exposure time is longer than the longest permissible exposure time and generating an alarm signal.

5,008,758
SUPPRESSING DARK CURRENT IN CHARGE-COUPLED DEVICES

Barry E. Burke, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 24, 1989, Ser. No. 356,778
Int. Cl.[5] H04N *3/14*
U.S. Cl. 358—213.16 **15 Claims**



1. A method for suppressing dark current in a first region of an MIS device, said first region having a charge packet therein, further non-liberated charges of one polarity spontaneously arising in said first region, said method comprising the steps of

(1) transferring said charge packet from said first region to a second region of said device; and

(2) supplying charges of a polarity opposite to said one polarity to said first region, said opposite polarity charges combining with said further non-liberated charges to prevent the liberation thereof into said charge pocket so as

to prevent the generation of dark current in said first region.

5,008,759

STILL IMAGE RECORDING APPARATUS WITH SOLID STATE PICKUP DEVICE

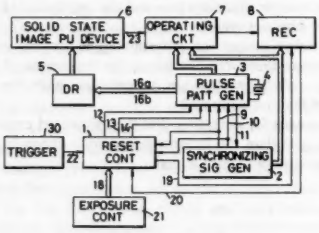
Masahiro Juen, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 18, 1988, Ser. No. 220,571

Claims priority, application Japan, Jul. 22, 1987, 62-182841

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—335 **3 Claims**



1. An apparatus having solid state image pickup means including a light-receiving unit for storing electric charges, gate means, and a transfer unit which is shielded from light, generating means for generating synchronizing signals periodically at a predetermined period, recording means for recording an output from said solid state image pickup means on a recording medium, and drive means for outputting first drive signals for causing said gate means to transfer stored electric charges from said light-receiving unit to said transfer unit and second drive signals for causing said transfer unit to output electric charges from said image pickup means to said recording means, and comprising:

start means for outputting a start signal to start a charge storage operation of said light-receiving unit of said image pickup means;

determining means for determining charge storage time of said light-receiving unit; and

control means for causing said drive means to output a first drive signal independently of said synchronizing signals in response to said start signal, and for causing said drive means to output another first drive signal independently of said synchronizing signals in response to completion of the determined charge storage time, said control means inhibiting said drive means from outputting said second drive signals during an interval from completion of said determined charge storage time to a subsequent first generation of a synchronizing signal, and thereafter causing said drive means to output first and second drive signals in synchronism with said synchronizing signals.

5,008,760

IMAGE PROCESSING SYSTEM

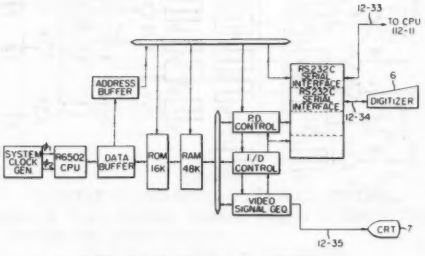
Katsuichi Shimizu, Kunitachi; Takehiko Shibata, Kokubunji; Yoshikazu Yokomizo, Kawagoe; Akira Suzuki, Kawasaki; Koichi Murakami, Yokohama; Tadashi Yoshida, Tokyo; Masaharu Tsukada, Kawasaki; Nao Nagashima, and Ken Miyagi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 884,677, Jul. 17, 1986, abandoned, which is a continuation of Ser. No. 647,414, Sep. 5, 1984, abandoned, which is a continuation of Ser. No. 311,864, Oct. 15, 1981, abandoned. This application Aug. 30, 1989, Ser. No. 401,482

Claims priority, application Japan, Oct. 17, 1980, 55-145293; Oct. 31, 1980, 55-154464; Dec. 16, 1980, 55-177677; Dec. 16, 1980, 55-177678; Dec. 16, 1980, 55-177679; Dec. 16, 1980, 55-177680; Dec. 16, 1980, 55-177681

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—451 **22 Claims**



1. An image processing system comprising:

means for reading an image of an original and generating an image signal representing the original image;

manual instruction means for providing an instruction necessary for execution of an image processing;

external operation means permitting manual entry of an image processing data set which defines a partial area of the original and an image processing for the partial area;

storage means adapted to store plural image processing data sets entered by said external operation means;

read out means operable to selectively read out from said storage means the image processing data set in accordance with the instruction from said instruction means; and

data processing means for processing an image signal corresponding to the partial area from among the image signals from said reading means, without necessity for operation of said external operation means, in accordance with the image processing data set read out from said storage means, and for outputting a processed image signal.

5,008,761

READOUT CIRCUIT IN MAGNETIC RECORDING DEVICE

Nobumasa Nishiyama, Hachioji; Makoto Saito, Tokyo; Yasuhide Ouchi, Koganei; Yasuhiro Katoh, Tokyo; Yoshihisa Kamo, Kokubunji; Makoto Koizumi, Hachioji; Hajime Aoi, Tachikawa; Naoki Sato, Hachioji, and Reijiro Tsuchiya, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 248,123, Sep. 23, 1988, Pat. No. 4,907,100. This application Mar. 5, 1990, Ser. No. 489,322

Claims priority, application Japan, Sep. 24, 1987, 62-237129; Dec. 21, 1987, 62-321210; Dec. 21, 1987, 62-321223

The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—45 **10 Claims**

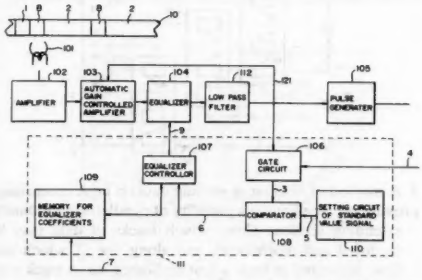
1. A readout circuit in a magnetic recording device comprising:

a magnetic head for reading a read out signal from a recording medium on which there are recorded test data, said test data having a read out signal which becomes an isolated waveform;

an equalizer for shaping said read out signal waveform;

detection means for detecting a distance between more than two level points in one waveform included in said read out signal waveform shaped by said equalizer;

a comparator means for comparing the distance between the level points in said waveform detected by said detection means with a reference value;



means for operating said detection means and said comparator means during at least a period when said magnetic head reads the test data;

an equalizer controller for controlling said equalizer so that the distance between the level points in the waveform detected by said detection means may be consistent with said reference value;

a pulse generator for forming a peak pulse from said read out signal shaped by said equalizer; and

a data detection unit for forming a digital data signal from said peak formed by said pulse generator.

5,008,762

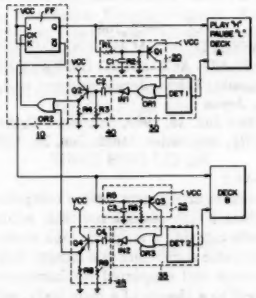
PARALLEL AND CONTINUOUS PLAYBACK CIRCUIT FOR AN AUDIO CASSETTE DECK OF THE DOUBLE-DECK TYPE

Song G. Sung, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyung Ki-Do, Rep. of Korea

Filed Jul. 10, 1989, Ser. No. 377,084

Int. Cl.[5] G11B *15/12, 15/18*

U.S. Cl. 360—61 **6 Claims**



1. A parallel and continuous playback circuit for an audio cassette deck of the double-deck type having a first and second deck with each deck having a playback head and a playback mode and a pause mode, comprising:

signal detection means for detecting the signal from the playback head of each of said first deck and said second deck and for detecting the playback of an unrecorded blank portion of a tape in the first deck and in the second deck;

pulse generator means operably connected with said signal detection means, for generating an arbitrary pulse signal in response to the detection by said signal detection means of the playback of an unrecorded blank portion of a tape in any one of the first deck and the second deck, said pulse signal identifying in which of said first and second decks said unrecorded blank tape portion is being played back; and

deck selector means operably connected with said pulse generator means and responsive to said pulse signal therefrom, for putting the one, of said first and second decks in which it is detected by said signal detection means that the unrecorded blank tape portion is being played back, into its said pause mode and for putting the other of said first and second decks into its said playback mode.

5,008,763

ROTATION CONTROL DEVICE FOR A ROTARY HEAD IN A MAGNETIC RECORDING AND REPRODUCING DEVICE

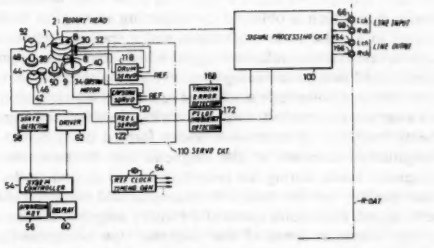
Mamoru Horino, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 14, 1988, Ser. No. 219,044

Claims priority, application Japan, Jul. 17, 1987, 62-178559

Int. Cl.[5] G11B *5/52*

U.S. Cl. 360—70 **5 Claims**



1. A rotation control device for a rotary head in a magnetic recording and reproducing device comprising:

a rotary head including frequency generating means for producing a frequency detection signal at a period determined by equally dividing one rotation of the drum and phase generating means for detecting a rotation reference position of the drum and providing a phase detection signal independent of the frequency detection signal;

means for generating a phase reference signal as a reference signal for the phase detection signal;

means for generating a frequency reference signal as a reference signal for the frequency detection signal; and

control means for controlling said rotary head by adjusting rotation phase of the drum to a predetermined state by the controlling rotation of the drum in accordance with a phase error between the phase detection signal and the phase reference signal and a phase error between the frequency detection signal and the frequency reference signal in such a manner that the phase detection signal is locked with the phase reference signal at a predetermined phase difference and the frequency detection signal is locked with the frequency reference signal at a predetermined phase difference.

5,008,764

ROTARY HEAD TYPE DIGITAL SIGNAL REPRODUCING APPARATUS WITH SLOW TAPE SPEED MODE AND IMPROVED TRACKING CONTROL

Shiro Yoshida, Maebashi; Yasuhiro Yamada, Yokosuka, and Shoji Ueno, Zama, all of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

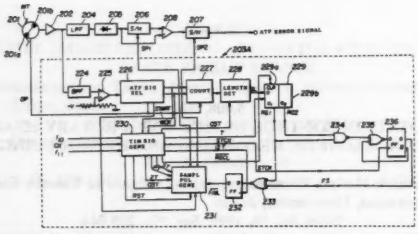
Continuation-in-part of Ser. No. 91,085, Aug. 31, 1987, Pat. No. 4,839,755. This application Mar. 16, 1988, Ser. No. 168,700

Claims priority, application Japan, Sep. 5, 1986, 61-209243; Oct. 2, 1986, 61-234961; Mar. 18, 1987, 62-63505

The portion of the term of this patent subsequent to Jun. 13, 2006, has been disclaimed.

Int. Cl.[5] G11B *5/584, 15/467*

U.S. Cl. 360—77.15 4 Claims



1. A rotary head type digital signal reproducing apparatus for playing a magnetic tape pre-recorded with a time division multiplexed signal in one of first and second modes, said time division multiplexed signal comprising pulse code modulated audio data which is obtained by subjecting an original audio signal to a pulse code modulation and a tracking reference signal, said tracking reference signal which amounts to a predetermined time period being time division multiplexed before and after said pulse code modulated audio data which amounts to a certain time period, said time division multiplexed signal being recorded on successive tracks formed obliquely to a longitudinal direction of the magnetic tape by two rotary magnetic heads, during the recording in said second mode, a data quantity per unit time, a frequency of said tracking reference signal, a rotational speed of the rotary magnetic heads and a tape transport speed of the magnetic tape being one-half those in said first mode, said rotary head type digital signal reproducing apparatus comprising:

reproducing means including two rotary magnetic heads for reproducing pre-recorded signals from the magnetic tape;

means for setting the tape transport speed to a speed identical to that in said second mode and for setting the rotational speed of the rotary magnetic heads to a speed identical to that in said first mode when playing the magnetic tape pre-recorded in said second mode; and

tracking control means for controlling tracking of the rotary magnetic heads based on reproduced tracking reference signals reproduced by said reproducing means, said reproduced tracking reference signals including out of reproduced signals obtained from said reproducing means during successive first through fourth scans made by the rotary magnetic heads with respect to two mutually adjacent tracks on the magnetic tape a reproduced tracking reference signal obtained in an end portion of said first scan and a reproduced tracking reference signal obtained in a beginning portion of said second scan immediately after said first scan, said first and second scans being successive scans in which a large reproduced output is obtainable by the rotary magnetic heads from said two mutually adjacent tracks compared to said third and fourth scans.

5,008,765

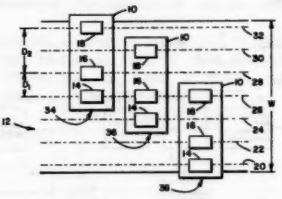
METHOD AND APPARATUS FOR READING OR WRITING ON TAPE USING A SERVO POSITIONED MULTIPLE CHANNEL HEAD

Robert J. Youngquist, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 17, 1989, Ser. No. 298,186

Int. Cl.[5] G11B *5/584, 5/29*

U.S. Cl. 360—77.12 21 Claims



1. A method of reading or writing data on tape, comprising:

providing a tape having a plurality of parallel, longitudinally extending sections along which tracks of data may be recorded and reproduced, and along one of which sections is located at least a first dedicated servo track containing prestored position information, all said sections being adjacent to each other and having the same predetermined width;

providing a multiple channel head having at least three channels, the center-to-center distance between at least two of the channels being equal to the center-to-center distance between adjacent sections, and the center-to-center distance between a third channel and the closest of the other channels being equal to twice the center-to-center distance between said adjacent sections, for accessing at each of a limited number of predetermined positions said dedicated servo track and at least one of said sections along which data may be recorded and reproduced each channel having at least one element for reading data from or writing data on the tape; and

using the position information on a dedicated servo track to controllably transversely position the head proximate to one of the predetermined positions, one of said channels thereby always being positioned to reproduce said prestored position information while the other channels access said additional sections along which data tracks may be located.

5,008,766

TAPE CASSETTE ATTACHMENT DEVICE WITH CLOSURE PLATE ACTUATED INSERTION SENSOR

Hiroyuki Chigasaki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 28, 1989, Ser. No. 372,451

Claims priority, application Japan, Jun. 28, 1988, 63-160286

Int. Cl.[5] G11B *15/675*

U.S. Cl. 360—96.5 3 Claims

1. A tape cassette attachment device comprising a cassette holder into which a tape cassette rotatably accommodating a pair of tape reels carrying a magnetic tape wound thereon,

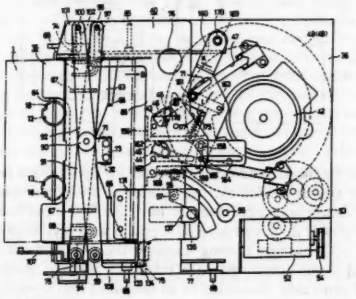
a slide guide frame supporting said cassette holder for vertical movement and supported for horizontal movement with respect to a chassis of a main body, said slide guide frame being reciprocating between a first position in which said tape cassette is enabled to be inserted into or detached from said cassette holder and a second position in which the tape reels of said tape cassette are in register with reel drive shafts of said chassis, and vertically shifting said cassette holder at said second position,

locking and holding means for locking and holding said slide

guide frame at said first position with respect to said chassis for inhibiting the shifting of said slide guide frame, and

means for sensing the tape insertion, said means sensing that said tape cassette has been inserted to a prescribed position in said cassette holder and releasing locking of said locking and holding means

wherein a closure plate movable between a closed position of closing a pair of reel drive shaft insertion openings formed at least on the bottom surface of the cassette half and an open position of opening said reel drive shaft insertion openings is mounted to the outer bottom surface of the cassette half and a turnable lid is provided for opening or closing an aperture on the front side of the cassette half;



wherein the cassette holder includes control projection means on the bottom plate thereof, said control projection means controlling the movement of said closure plate in opposition to the inserting operation of said tape cassette and shifting said closure plate from said closure position to said opening position on the occasion of the shifting of said cassette half; and

wherein said tape cassette insertion sensor means is at a position of being thrust and controlled by the cassette half only when the tape cassette is introduced into said cassette holder and said closure plate is shifted completely to said opening position by said control projection means, said sensor means being at a position of being not thrust and controlled by said cassette half when said closure plate is not shifted completely to said opening position.

5,008,767

FLYING-TYPE COMPOSITE MAGNETIC HEAD HAVING MAGNETIC CORE WITH IMPROVED FLATNESS OF AIR-BEARING SURFACE

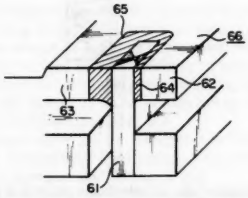
Hitoshi Iwata, Kumagaya; Kazumi Noguchi, Kamikawa; Toshikazu Nishiyama, Fukaya, and Tadashi Shinohara, Chiyoda, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jan. 23, 1989, Ser. No. 299,536

Claims priority, application Japan, Jan. 22, 1988, 63-12343

Int. Cl.[5] G11B *5/60*

U.S. Cl. 360—103 **24 Claims**



1. A flying-type composite magnetic head comprising: a slider made of a non-magnetic ceramic and having side rails extending longitudinally on both lateral sides of said head; a slit extending longitudinally in one of said side rails; and a magnetic core constituted by a pair of core pieces bonded to each other with a first glass and fixed in said slit with a second glass, wherein

(a) at least one opposing surfaces of said core pieces is formed with an Fe-Al-Si thin layer;

(b) said opposing surfaces constitute a magnetic gap of said magnetic core;

(c) said magnetic core and said slit are shaped such that there are sufficient gaps between said magnetic core and both inner surfaces of said slit at least in a region exposed to an air-bearing surface of said magnetic head, and that said magnetic core is in contact with one of the inner surfaces of said slit in a region distant from said air-bearing surface; and

(d) said gaps on both sides of said magnetic core in a region exposed to said air bearing surface are filled with said second glass, whereby said air-bearing surface including said magnetic core has improved flatness.

5,008,768

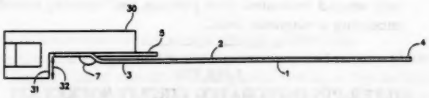
DISK HEAD ASSEMBLY FLEXURE WITH SLOPED RAMP SUPPORT STRUCTURE

Carl J. Carlson, Poway; Mourad Zarouri, San Diego, and Warren Coon, Poway, all of Calif., assignors to Computer & Communications Technology Corp., San Diego, Calif.

Filed Mar. 27, 1989, Ser. No. 328,869

Int. Cl.[5] G11B *5/48*

U.S. Cl. 360—104 **17 Claims**



1. A disk drive flexure comprising:

(a) a support structure having an attachment end for connection to a load beam of a disk drive and a pair of parallel spaced-apart outriggers, each outrigger being connected at one end to the attachment end of the support structure and having a distal end with a connection edge approximately perpendicular to the longitudinal axis of the outrigger;

(b) a tongue situated approximately parallel to and spaced apart from the support structure, the tongue having an elongated main body with lateral extensions on either side of the main body with lateral extensions on either side of the main body and at one end thereof, each lateral extension extending sideways from the main body of the tongue to at least the connection edge of the distal end of one of spaced apart outriggers, and each having a connection edge approximately parallel to and spaced apart from the connection edge of the distal end of said outrigger; and

(c) a pair of sloped connecting ramps, each coupled at one end to the connection edge of the distal end of an outrigger, and at the other end to the connection edge of a lateral extension of the tongue, such that the height of the ramps spaces the tongue apart from the support structure.

5,008,769

ROTARY HEAD TYPE MAGNETIC RECORDING/REPRODUCING DEVICE

Koji Kaneko, and Yasuyuki Sugino, both of Higashi-Hiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 12, 1990, Ser. No. 464,222

Claims priority, application Japan, Jan. 12, 1989, 1-7028

Int. Cl.[5] G11B *15/60*

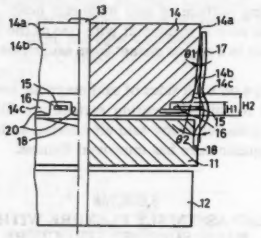
U.S. Cl. 360—130.24 **4 Claims**

1. A rotary head type magnetic recording/reproducing device comprising:

a stationary drum having at an outer surface thereof a spiral cut portion for guiding a magnetic tape;

a motor having a rotary shaft penetrating said stationary drum; and

a rotary drum disposed coaxially with said stationary drum and secured to said rotary shaft, said rotary drum comprising a cylindrical portion which is slightly greater in diameter than said stationary drum, a first truncated cone portion integrally connected to said cylindrical portion at



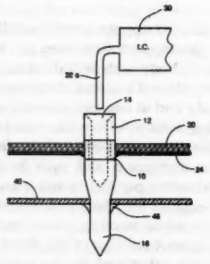
a bottom thereof and decreasing in diameter in a direction toward said stationary drum at a first taper angle, and a second truncated cone portion integrally connected to a top surface of said first truncated cone portion at a bottom thereof and decreasing in diameter in said direction toward said stationary drum at a second taper angle which is greater than said first taper angle, said rotary drum having an opening at a portion adjacent to a top end of said second truncated cone portion, said opening accommodating a magnetic head.

5,008,770

FILTER PIN INTEGRATED CIRCUIT SOCKET KIT

David H. Hilland, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 20, 1990, Ser. No. 481,920
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—56 **3 Claims**



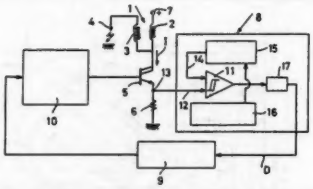
1. A transient protection assembly comprising a protection board which has a plurality of holes and a metal surface, a plurality of metal socket pins, a plurality of transient protection devices in the form of sleeves with each having an inner surface and an outer surface, each transient protection device being mounted on one of the socket pins with its inner surface in contact with the socket pin so that the combination of a socket pin and a transient protection device forms a filter pin socket device, each filter pin socket device being mounted in a hole of the protection board with the outer surface of the transient protection device contacting said metal surface, each said socket pin having a hole in a first end for receiving a lead of an integrated circuit, and each said socket pin having a second end for insertion into a circuit hole of a printed circuit board.

5,008,771

DIAGNOSTIC CIRCUIT FOR UNITS PROVIDING CURRENT CONTROL AND PROTECTION AGAINST EXCESSIVE HEAT DISSIPATION FOR SEMICONDUCTOR POWER DEVICES

Sergio Palara, Acicastello, Italy, assignor to SGS-Thomson Microelectronics s.r.l., Agrate Brianza, Italy

Filed Dec. 6, 1989, Ser. No. 446,857
Claims priority, application Italy, Dec. 13, 1988, 22924 A/88
Int. Cl.[5] H02N *3/087*
U.S. Cl. 361—103 **11 Claims**



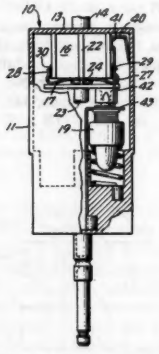
1. A diagnostic and control circuit for operating a semiconductor power device through periodic firing and quenching states comprising a comparator having a first input connected to the power device so as to be supplied with a voltage proportional to a current passing through the power device and a second input connected to a reference voltage generator, a signal generator connected to an output of said comparator so as to generate a diagnostic signal whenever the comparator output indicates the periodic growth of said proportional voltage beyond a reference voltage generated by said reference voltage generator, and means sensitive to the temperature of the power device which act on said reference voltage generator so as to reduce said reference voltage in response to a temperature increase beyond a preset limit.

5,008,772

TELEPHONE CIRCUIT PROTECTOR MODULE HAVING PLURAL CIRCUIT GROUNDING MEANS

Helmuth Neuwirth, Garden City; Carl Meyerhoefer, Dix Hills; William V. Carney, Oyster Bay, and Peter L. Visconti, Baldwin, all of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Sep. 24, 1990, Ser. No. 587,072
Int. Cl.[5] H02H *3/22*
U.S. Cl. 361—119 **3 Claims**



1. In a subscriber circuit telephone protector module including a housing, excess voltage and current protector means disposed within said housing for grounding currents having voltage and current flow above predetermined levels, the improvement comprising: said excess voltage means including

a three-element gas tube having a central electrode and first and second end electrodes, a gas tube fail safe device including an elongated metallic clip contacting said center electrode and maintained in insulated relation relative to said end electrodes by fusible members; a ground assembly including an elongated ground pin extending outwardly of said housing and having an inner end terminal, a transversely extending ground plane member carried by said inner end; said center electrode having a laterally extending contact pin penetrating said ground plane member for electrical communication therewith, said elongated clip being carried by said contact pin; a pair of test point contacts each contacting a respective end electrode independently of said fusible means at a first end thereof, and having a transversely extending second end overlying said ground plane member cylindrical insulator means spacing said second end from said ground plane member; a pair of long contacts each having first and second ends, said first end contacting said second end of a respective test point contact wherein corresponding through orifices in each of said test point contact and said long contact are aligned; and a pair of thermally actuated heat coils, each carried by a respective long contact and having extensible point contact means penetrating said aligned orifices to contact said ground plane member upon heat coil actuation; whereby each of said three element gas tube and fail safe device are in constant contact with said ground plane member, and said heat coils are selectively in contact with said ground plane member; said gas tube serving to ground voltage surges in the range of 200 to 300 volts, said fail safe device serving to ground sustained current surges, and said heat coils becoming operative in the presence of sneak currents in the range of under one ampere.

5,008,773

SOLENOID VALVE CONTROL CIRCUIT

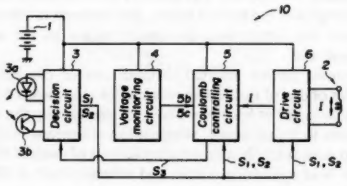
Takao Yoshida; Toshio Ikeda; Takhiro Douke, and Toshio Eki, all of Kanagawa, Japan, assignors to Toto, Ltd., Fukuoka, Japan

Filed Nov. 21, 1988, Ser. No. 273,835

Claims priority, application Japan, Nov. 20, 1987, 62-294800; Nov. 20, 1987, 62-294801

Int. Cl.[5] H01H *47/32*

U.S. Cl. 361—187 **48 Claims**



1. A solenoid valve control circuit for operatively connecting a battery to a solenoid to energize the solenoid to actuate a valve, said control circuit including coulomb controlling means for controllably supplying an electric quantity to the solenoid,

wherein said electric quantity if a required electric quantity corresponding to the voltage of said battery,

said coulomb controlling means comprising means for supplying said required electric quantity to said solenoid,

a decision circuit for producing an energizing signal indicating that said battery is to be connected to said solenoid under a prescribed condition; and

a solenoid valve drive circuit responsive to said energizing signal for operatively connecting said battery to said solenoid to energize said solenoid, and

wherein said coulomb controlling means comprises:

a power supply voltage monitoring circuit for monitoring the voltage of said battery and producing a signal corresponding to the battery voltage; and

a coulomb controlling circuit for monitoring the electric quantity supplied from said battery to said solenoid and for producing a de-energizing signal based on the signal from said power supply voltage monitoring circuit when the electric quantity supplied to said solenoid is equal to said required electric quantity corresponding to said battery voltage.

5,008,774

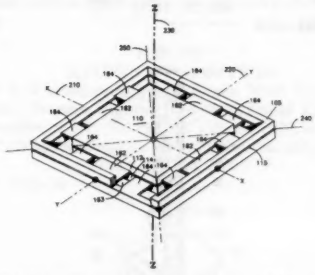
CAPACITIVE ACCELEROMETER WITH MID-PLANE PROOF MASS

Robert H. Bullis, Avon, and James L. Swindal, East Hampton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 28, 1989, Ser. No. 317,258

Int. Cl.[5] G01P *15/02*; H01G *7/00*

U.S. Cl. 361—283 **7 Claims**



1. A solid-state silicon accelerometer comprising:

a three-plate capacitor including fixed top and bottom plates and a silicon movable sensing plate having a top surface separated from said top plate by a top gap and a bottom surface separated from said bottom plate by a bottom gap, defining a reference midplane and being connected to support members by flexible connections extending across a support gap between said silicon sensing plate and said support members to move between said top and bottom plates in response to acceleration along an acceleration axis perpendicular to said reference midplane, whereby acceleration along said acceleration axis displaces said silicon sensing plate from said reference midplane and alters the capacitance between said silicon sensing plate and said top and bottom plates, in which;

said top and bottom plates and said support members are bonded together to form a rigid structure;

said silicon sensing plate is connected to said support members by at least one pair of flexures extending a predetermined hinge width along opposite sides of said sensing plate and having a predetermined hinge length less than the length of said sensing plate, so that a communication path is established between a top chamber between said top and said silicon sensing plates and a bottom chamber between said bottom and said silicon sensing plates;

at least one chamber has motion stops disposed therein and grooves to facilitate squeeze-film damping in one of said silicon sensing plate and said fixed plate; and

electronic means for measuring the capacitance of at least one of said chambers, characterized in that:

said silicon sensing plate is formed from top and bottom silicon slabs bonded together at an interface region, each of said silicon slabs being boron doped on a flexure surface abutting said interface region, and is connected to said support members by flexures lying substantially in said flexure surfaces and being disposed about said support gap in a predetermined pattern, whereby said top and bottom silicon slabs combine to form a composite sensing plate connected to said support members by said at least one pair of flexures disposed symmetrically in said top and

bottom plates and substantially in said sensing plate midplane,

said top silicon slab, a corresponding top slab portion of said support members and a corresponding top slab flexure and said bottom silicon slab, a corresponding bottom slab portion of said support member and a corresponding bottom slab flexure being micromachined from a block of silicon.

5,008,775

SENSOR AND CONTROL MODULE WITH IMPROVED SENSOR ISOLATION

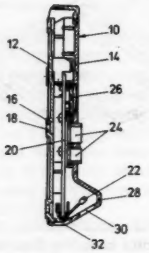
Juergen Schindler, Gross-Gerau-Wallerstaedten, and Hartwig Heinen, Bruchkoebel, both of Fed. Rep. of Germany, assignors to Honeywell Regelsysteme GmbH, Fed. Rep. of Germany

Filed Sep. 11, 1989, Ser. No. 405,481

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1988, 8811566[U]

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—383 7 Claims



1. A sensor and control module comprising a housing having air slots in the upper and lower portions, at least one sensing element located in the lower portion of said housing,

a control circuit board producing heat mounted in said upper portion and said lower portion of said housing and connected to said sensing element, at least one manually actuable control element located on an exterior surface of said housing and connected to said circuit board, whereby said housing provides a chimney effect as heat of said circuit board causes air to be drawn through said air slots of said lower portion past said sensing element and said circuit board to exit through said air slots in said upper portion.

5,008,776

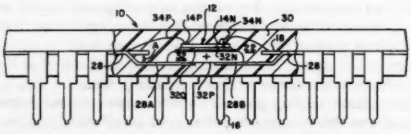
ZERO POWER IC MODULE

Daniel Queyssac, Dallas, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jun. 6, 1990, Ser. No. 531,150

Int. Cl.[5] H05K *7/00*

U.S. Cl. 361—392 15 Claims



1. A device package for providing electrical power to an electronic circuit device comprising, in combination:

a body of non-conductive material;

a finger lead assembly encapsulated within said body of non-conductive material, said finger lead assembly including a plurality of conductive finger leads, with one of said finger leads defining a power lead;

a battery having a positive polarity power terminal and a negative polarity power terminal, one of said battery power terminals being mounted onto said power lead; and,

an electronic circuit device encapsulated within said body of non-conductive material and coupled to one of said battery power terminals opposite of said battery terminal mounted onto said power lead.

5,008,777

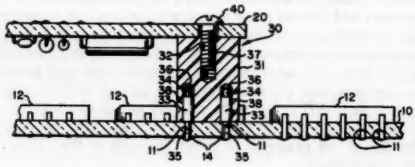
AUXILIARY BOARD SPACER ARRANGEMENT

William F. Burns, Plano, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 14, 1988, Ser. No. 257,654

Int. Cl.[5] H05K *1/14*

U.S. Cl. 361—412 21 Claims



17. An arrangement of connected first and second circuit boards comprising:

at least one first board, each first board comprising at least one mounting hole;

a second board, comprising a plurality of circuit component holes for mounting discrete components and integrated circuits; and

at least one spacer means, each spacer means for spatially attaching the at least one first board to the second board;

wherein each of the spacer means comprises:

at least one body having a means defining a hole at one end;

pin means protruding from the at least one body at an end opposite the one end, and inserted into the circuit component holes of the second board, and soldered to the second board for connecting the spacer means to the second board; and

a fastening device inserted through one of the mounting holes of one of the first boards and into the means defining a hole in the at least one body, for connecting the spacer means to a first board, wherein the pin means comprises two pins, wherein a protruding section of each of the two pins is of cylindrical shape, and wherein each of the two pins comprises a tapered top portion.

5,008,778

ACCOMMODATION DEVICE WITH SHIELDED CIRCUIT BOARDS

Gerhard Peyerl, Nuremberg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 17, 1988, Ser. No. 258,405

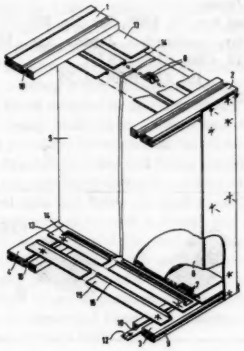
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1987, 3735456

Int. Cl.[5] H05K *7/14, 7/18*

U.S. Cl. 361—415 3 Claims

1. A framework for mounting circuit boards of a predetermined size which are housed in shielded housings whose walls include grooves and said framework for also mounting circuit boards of said predetermined size which are outside shielded housings, said framework having ridges which serve as guide

means for insertion into said grooves in said shielded housings, said framework having carriers with grooves which serve as



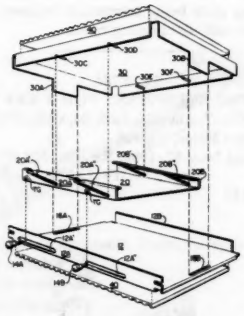
support means for said circuit boards which are outside shielded housings.

5,008,779

SHELF ASSEMBLY HAVING INFINITELY VERTICALLY ADJUSTABLE TOP SURFACE

Garland R. Salmon, Durham, N.C., assignor to Newton Instrument Company, Butner, N.C.

Filed Jun. 21, 1990, Ser. No. 542,250
Int. Cl.[5] H05K 7/14
U.S. Cl. 361—415 **18 Claims**



1. A vertically adjustable shelf assembly for use in storage cabinets and the like comprising:

a shelf base adapted to be secured to a storage cabinet and having a bottom support surface, said base further having a front wall extending along at least a portion of the length of the front side thereof and defining at least one generally horizontally extending elongate opening therein;

vertical adjustment means positioned on said support surface of said base and adapted for lateral slidable movement thereon, said adjustment means comprising a member having front and rear sides and front wall and a rear wall extending along at least a portion of the length of the front and rear sides thereof, respectively, and each defining at least one elongate guide surface extending generally laterally upwardly, said vertical adjustment means further comprising lateral movement means secured to said front wall thereof and extending through said at least one elongate opening in the front wall of said base so that lateral movement of said lateral movement mean will laterally translate said vertical adjustment means relative to said base; and

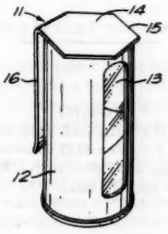
a shelf top movably secured relative to said shelf base so as to prevent lateral movement thereof while allowing vertical movement relative to said base, said top having front and rear sides and a front wall and rear wall extending along at least a portion of the length of the front and rear sides thereof, respectively, and guide surface engagement means extending inwardly from said front and rear walls and into operative engagement with said at least one laterally upwardly extending guide surface in each of said front and rear walls of said vertical adjustment means so that selective lateral movement of said vertical adjustment means in a direction to urge said guide surface engagement means upwardly along said guide surfaces therein serves to vertically raise said top, and lateral movement of said vertical adjustment means in a direction to urge said guide surface engagement means downwardly along said guide surfaces therein serves to vertically lower said top.

5,008,780

ILLUMINATING DEVICES

Patrick A. Pennington-Ridge, 19 Staple, West Quantoxhead, Williton, Taunton, Somerset TA4 4DQ, United Kingdom

Continuation of Ser. No. 311,468, Feb. 16, 1989, abandoned.
This application Feb. 27, 1990, Ser. No. 485,535
Int. Cl.[5] F21K 2/00
U.S. Cl. 362—34 **12 Claims**



1. An illuminating device comprising an outer tubular sleeve provided with a window, an inner tubular sleeve, rotatable coaxially within the outer sleeve, at least one aperture formed in the inner sleeve, and at least one self luminous light source of elongated form disposed within the inner sleeve and longitudinally thereof, the aperture formed in said inner sleeve having an axially elongate portion extending substantially parallel to the axis of rotation of the inner sleeve and another portion of the aperture having a tapered cross configuration and lesser axial length than said axially elongate portion and extending laterally thereof, whereby relative rotation of the inner and outer sleeves to reduce the axial length of the light that is illuminated through the window without reduction of the width thereof.

5,008,781

HEADLAMP UNIT

Naohi Nino, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Shizuoka, Japan

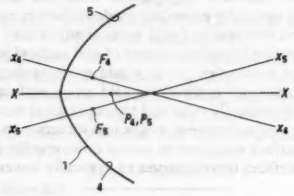
Filed Nov. 8, 1989, Ser. No. 433,308
Claims priority, application Japan, Nov. 8, 1988, 63-281607
Int. Cl.[5] B60Q 1/00
U.S. Cl. 362—61 **13 Claims**

1. A headlamp unit comprising:

a multi-surface concave reflector having a beam axis along which a light beam projects forward to produce a beam pattern, the reflector including:

upper and lower cancave light reflecting parts which are respectively located at upper and lower positions with respect to a given portion of the reflector, and

left and right concave light reflecting parts which are respectively located at left and right positions with respect to said given portion and have respective focuses on their respective optical axes, said optical axes being inclined with respect to the beam axis, each of the left and right concave light reflecting parts having respective curves of second degree when cut by vertical and horizontal planes; and



first and second filaments of an electric bulb which are located on said beam axis,

wherein the optical axes of said left and right concave light reflecting parts are inclined toward the left and right concave light reflecting parts with respect to said beam axis, respectively, and

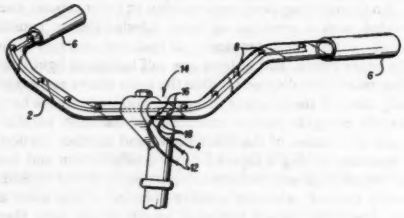
wherein the focuses of said left and right concave light reflecting parts are located at generally right and left positions with respect to said first filament, respectively.

5,008,782

LIGHTED HANDLEBAR FOR BICYCLES

William D. Murray, P.O. Box 3137, Brewer, Me. 04412

Filed Aug. 24, 1990, Ser. No. 572,211
Int. Cl.[5] B62J *6/18*
U.S. Cl. 362—72 **17 Claims**



1. A bicycle handlebar including:

a plurality of electric lamps, each said lamp having a positive electric terminal and a negative electric terminal, said lamps so disposed along the length of said handlebar that light from said lamps may radiate away from said handlebar;

a positive voltage connector mounted upon the surface of said handlebar for electrically connecting said lamps to an external voltage source;

a negative voltage connector mounted upon the surface of said handlebar for electrically connecting said lamps to an external voltage source;

conductive wires internal to said handlebar, said wires electrically connecting all of the positive terminals with said positive connector and connecting all of the negative terminals with said negative connector; whereby

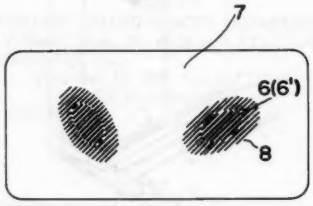
when external voltage is supplied to the connectors said lamps light.

5,008,783

NUMBER PLATE INCLUDING LUMINOUS CHARACTERS

Masaaki Mastuoka, Tokyo, Japan, assignor to World Auto Plate Ltd., Tokyo, Japan

Filed Apr. 14, 1989, Ser. No. 339,195
Claims priority, application Japan, Apr. 18, 1988, 63-50996[U]; Apr. 18, 1988, 63-50997[U]
Int. Cl.[5] B60Q *1/56*
U.S. Cl. 362—83.2 **10 Claims**



1. A number plate including luminous characters of the type comprising:

a number plate having a plurality of character portions punched therefrom,

a plate molded of transparent or translucent synthetic resin adhesively secured to said number plate,

illuminating bulbs for illuminating said character portions disposed behind said number plate, and

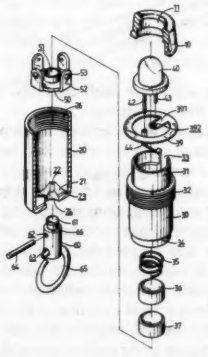
a light scattering plate made from a transparent or translucent material and having a light scattering region with a number of quadrangular pyramid-shaped projections formed thereon, each of which has an apex angle which is about 140°, in an area only corresponding to positions where said illuminating bulbs are disposed, said light scattering plate being interposed between said number plate and said illuminating bulbs.

5,008,784

LIGHTING EQUIPMENT FOR A KEY RING

Howard Wang, No. 7, Alley 14, Lane 64, Ching Ping Rd., Chung Ho City, Taipei Hsien, Taiwan

Filed May 17, 1990, Ser. No. 524,573
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—116 **2 Claims**



1. A lighting equipment for a key ring comprising a cylindrical tube having a profile formed in a bottom thereof, said profile having a pair of lower grooves and a pair of higher grooves; a barrel being substantially received in said cylindrical tube with an upper end extending beyond said cylindrical

tube, a notch being vertically formed in said upper end of said barrel; a ring element being provided around said upper end of said barrel and contacting an upper end of said cylindrical tube, a tongue being integrally formed on said ring element and extends toward a center thereof, said tongue extending through said notch toward a center of said barrel; a light bulb which has two prongs being received in said upper end of said barrel, one of said prongs being integrally fixed to said tongue so that said one prong is electrically connected to said tongue, a resilient leg being coupled to an other prong; a spring and at least one cell being received in a lower end of said barrel; a bracket being provided between said barrel and said cylindrical tube, said bracket and said cell being biased downward by said spring; a rod extending through a center of said bottom of said cylindrical tube and being coupled to said bracket; a pin being laterally provided on said rod; and said key ring being strung on a lower end of said rod; and said pin being actuated to follow said profile so that both ends of said pin are laid in either said upper grooves or said lower grooves and so that a center electrode of an uppermost cell is actuated either to contact or to be separated from said resilient leg in order to turn on or turn off said light bulb.

5,008,785

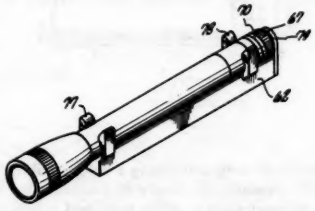
RECHARGEABLE MINIATURE FLASHLIGHT

Anthony Maglica, Ontario; Ralph E. Johnson, Los Alamitos, and Armis L. Lewis, Cucamonga, all of Calif., assignors to Mag Instrument, Inc., Ontario, Calif.

Continuation-in-part of Ser. No. 34,918, Apr. 6, 1987, abandoned, which is a continuation of Ser. No. 828,729, Feb. 11, 1986, Pat. No. 4,658,336, which is a continuation of Ser. No. 648,032, Sep. 6, 1984, Pat. No. 4,577,263. This application Oct. 23, 1987, Ser. No. 111,538

Int. Cl.[5] F21L *7/00*

U.S. Cl. 362—183 **30 Claims**



1. A miniature rechargeable flashlight system including a flashlight and a recharger,

the flashlight comprising:

battery retaining means;

a lamp bulb;

means for holding the lamp bulb;

a substantially parabolic reflector;

a substantially planar lens;

means for retaining the reflector and the lens at one end of said battery retaining means;

means for eletrically coupling first and second electrodes of said lamp bulb to battery electrodes;

a tail cap at said other end of said battery retaining means including a positive conductive means and a negative conductive means adapted to respectively contact separate electrical contacts of said recharger; and

means to cause one way current flow through said negative conductive means;

the recharger comprising:

a housing adapted to accommodate said flashlight;

a circuit for regulation of constant charging current provided to said flashlight;

and wherein the separate electrical contacts are positive and negative contacts for contacting with said positive conductive means and said negative conductive means of said flashlight.

5,008,786

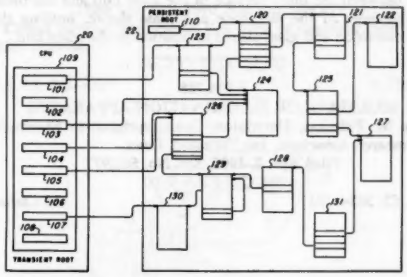
RECOVERABLE VIRTUAL MEMORY HAVING PERSISTANT OBJECTS

Satish M. Thatte, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 774,828, Sep. 11, 1985. This application Nov. 19, 1986, Ser. No. 932,813

Int. Cl.[5] G06F *11/00*

U.S. Cl. 364—200 **10 Claims**



1. A computer system having a recoverable virtual memory, comprising:

(a) a virtual memory having a random access memory and a backing store:

(b) a plurality of pages stored in the backing store, each of said pages corresponding to a virtual memory page;

(c) a plurality of memory objects allocated within said virtual memory, said memory objects interconnected by pointers;

(d) a persistent root having a pointer to a memory object, wherein all memory objects in the transitive closure of said persistent root define a set of long term objects not subject to reclamation by the system during garbage collection;

(e) means for taking checkpoints of the current state of said virtual memory at selected times, said means including means for materializing a sibling page corresponding to each of a plurality of said virtual memory pages, wherein the latest written version of a virtual memory page and its respective sibling page which was written before a current checkpoint state is used to define the checkpoint state; and

(f) a state indicator identified with each virtual memory page and each sibling page for indicating which of said virtual memory or sibling pages stored in the backing store comprise a most recent checkpoint.

5,008,787

SYSTEM FOR INSULATED SUPPORT OF NEON LIGHTS

Albert Sklar, and Barbara Sklar, both of 3513 Villa Ter., San Diego, Calif. 92104

Filed Jul. 2, 1990, Ser. No. 546,713

Int. Cl.[5] F21V *23/02*

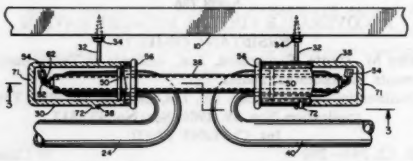
U.S. Cl. 362—221 **5 Claims**

1. In the installation and support of neon tubes having cylindrical glass encased high voltage wires electrically connected to the cylindrical ends of neon tubes, the improvement comprising:

a cylindrical glass cup having two aligned, intersecting and joined longitudinal bores;

the cylindrical end of the glass encased high voltage wire being slidably positionable in one bore and the cylindrical end of the neon tube being slidably positionable in the other bore;

a resilient O-ring for encircling the two adjacent ends of the respective glass sleeve and neon tube electrode,



and said O-ring being resiliently compressible in the space between the inner surface of the glass cup and the outer surfaces of the electrode and glass sleeve, holding the electrode and glass sleeve in position in the glass cup.

5,008,788

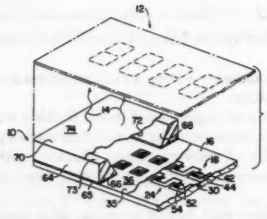
MULTI-COLOR ILLUMINATION APPARATUS

John M. Palinkas, Harwinton, Conn., assignor to Electronic Research Associates, Inc., Winsted, Conn.

Filed Apr. 2, 1990, Ser. No. 502,977

Int. Cl.[5] F21V *9/00*

U.S. Cl. 362—231 **14 Claims**



1. Multi-color illumination apparatus, comprising:

substrate means having a generally planar surface for carrying foil leaf means defining a plurality of electrical circuit paths;

at least one first light diode (LED) means for emitting light of a first color in response to a first excitation voltage signal applied to the LED;

at least one second light emitting diode (LED) means for emitting light of a second color in response to a second excitation voltage signal applied to the LED;

said first and second LED's defining an LED color pair;

reflective white masking means for covering said surface of said substrate means and having openings therethrough whereby the area of said substrate surface in registry with said openings in said white masking means is exposed;

one electrical circuit path of said plurality including a first plurality of foil leaf areas arranged in a spaced relation to one another and defining a first electrical circuit path for physically and electrically connecting the anode of said first or second LED of one LED color pair and the cathode of the other of said first or second LED of said one LED color pair to one another and to said first electrical circuit path;

a second electrical circuit path of said plurality including a second plurality of foil leaf areas, a first portion of said plurality of foil leaf areas arranged in a spaced relation to one another and one-for-one with said first plurality of foil leaf areas defining said first electrical circuit path, said first portion of said second plurality of foil leaf areas comprising said second electrical circuit path and being electrically connected to the cathode of said first or second LED of said one LED color pair and the anode of the other of said first or second LED of said one LED color pair;

said second plurality of foil leaf areas including a second portion of foil leaf areas disposed generally oppositely said first portion and substantially in registry with said first plurality of foil leaf areas, said second portion of foil leaf areas being arranged in a spaced relation to one another and physically and eclectically connecting the anode of said first or second LED of a second LED color pair and the cathode of the other of said first or second LED of said second LED color pair to one another and to said second electrical circuit path;

a third electrical circuit path of said plurality including a third plurality of foil leaf areas arranged in a spaced relation to one another and one-for-one with said second portion of foil leaf areas and substantially in registry with said first portion of foil leaf areas of said second plurality of foil leaf areas, said third plurality of foil leaf areas being electrically connected to the cathode of said first or second LED of said second LED color pair and the anode of the other of said first or second LED of said second LED color pair, and

said one and second LED color pairs being located substantially in registry with said openings in said white masking means.

5,008,789

FLUORESCENT LAMP HAVING ULTRAVIOLET REFLECTING LAYER

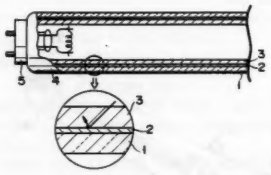
Kiyotaka Arai; Hirofumi Sumoto, and Keizi Ichinomiya, all of Anan, Japan, assignors to Nichia Kagaku Kogyo K.K., Tokushima, Japan

Filed Feb. 14, 1990, Ser. No. 479,967

Claims priority, application Japan, Feb. 22, 1989, 1-44488

Int. Cl.[5] F21M *3/14*

U.S. Cl. 362—255 **4 Claims**



1. A fluorescent lamp comprising a bulb, an ultraviolet reflecting layer consisting essentially of a nonemission material formed on an inner surface of the bulb, and a light-emitting layer formed on the ultraviolet reflecting layer and excited to emit light upon discharge, wherein the nonemission material consists essentially of α-alumina having an average grain size of 0.05 μm to 2 μm, and the coating amount of the ultraviolet reflecting layer on the inner surface of the bulb if 0.05 to 5 mg/cm^2.

5,008,790

FLUORESCENT-TYPE FIXTURE HAVING REMOVABLE FOLD-OUT LAMP SOCKETS

William C. Fabbri, Billerica, Mass., assignor to Genlyte, Inc., Wilmington, Mass.

Filed Mar. 14, 1989, Ser. No. 323,285

Int. Cl.[5] F21S *3/00*

U.S. Cl. 362—220 **5 Claims**

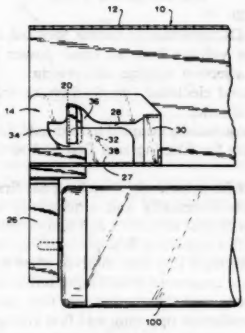
1. A fluorescent light fixture comprising:

a housing including a guide means comprising a tab with an L-shaped cross section inwardly extending from said housing;

at least one socket assembly comprising at least one fluorescent light socket and a channel for engaging said guide means including an enlarged portion within said channel for rotating said socket assembly with respect to said

housing from a first position wherein said light socket is positioned to engage a fluorescent light bulb and a second position wherein said light socket is protected within said housing;

wherein said enlarged portion is comprised of two quarter circles of a common center and a diameter substantially



equal to a length of said tab, said quarter circles each having an edge in parallel to an unenlarged portion of said channel, and said quarter circles having 90 degrees therebetween; and

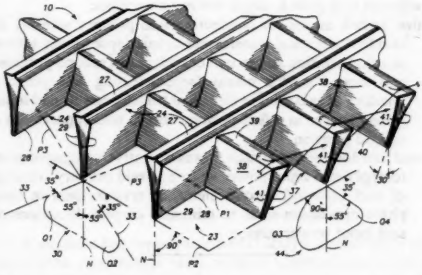
wherein said socket assembly can be removed from said housing by a straight-line movement from said second position.

5,008,791

LOW DIRECT GLARE AND WALL WASH PARABOLIC LIGHTING GRID

Ronald N. Caferro, 1520 Rockwood Blvd., Spokane, Wash. 99203

Filed Jul. 19, 1990, Ser. No. 555,250
Int. Cl.[5] F21V *11/06*
U.S. Cl. 362—290 **15 Claims**



1. A lighting system for a room having a ceiling and a wall, the lighting system comprising:

a light;

a light grid;

a frame mounting the light grid to the ceiling below the light so light therefrom will pass through the grid;

wherein the light grid is comprised of intersecting first and second sets of parallel elongated parabolic louvers;

wherein the louvers of at least one of the first or second sets are angularly oriented to nadir and spaced apart to confine light passing downwardly therethrough to an asymmetrical candlepower distribution curve, including a wall washing quadrant on one side thereof and a low direct glare distribution quadrant including a cut off angle of approximately 45 to 70 degrees from nadir on an opposite side thereof; and

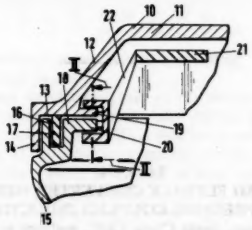
wherein the light and light grid are placed adjacent the wall such that the wall washing quadrant is oriented toward the wall to illuminate the wall to the ceiling.

5,008,792

DEVICE FOR LOCKING AN OPTICALLY TRANSPARENT TROUGH TO A HOUSING OF AN EXTENDED-FIELD LIGHT

Heinz Liedtke, Dortmund; Cornelius Ploeger, Fröndenberg-Frömern, and Wilmut Görner, Mudau, all of Fed. Rep. of Germany, assignors to ABB CEAG Licht- und Stromversorgungstechnik GmbH, Soest, Fed. Rep. of Germany

Filed Mar. 26, 1990, Ser. No. 499,027
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1989, 3909890
Int. Cl.[5] F21V *21/00*
U.S. Cl. 362—374 **6 Claims**



1. An apparatus comprising an optically transparent trough of an extended-field light, a housing, and a device for locking said trough to said housing, said trough and said housing each having a respective mutually adjacent edge disposed one above the other and at least one respective inwardly projecting mutually parallel projection disposed at said edge being oriented in the same direction and disposed one above the other in an assembled condition of said trough and said housing forming at least one pair of projections, and said locking device including a slider element being manually longitudinally displaceably guided in said housing between a releasing position and a locking position from outside said housing, and at least one grip each being coupled with said slider element for each pair of projections, said at least one grip having jaws receiving said pair of projections therebetween upon displacement of said slider element from said releasing position to said locking position.

5,008,793

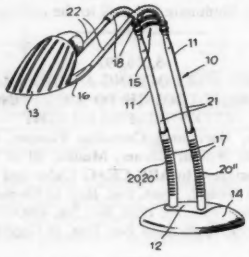
GUIDABLE ARM, PARTICULARLY FOR FREE-POSITIONING LAMPS

Stephan Copeland, New York, N.Y., assignor to FLOS S.p.A., Bovezzo, Italy

Filed May 7, 1990, Ser. No. 524,220
Int. Cl.[5] F21S *3/12*; F21V *21/32*
U.S. Cl. 362—413 **6 Claims**

1. Guidable arm particularly for free-positioning lamps of the type with a stand anchored to a base attached to a free end holding a lamp head, characterized by the fact that it is made up of two stems (**11**) equal to one another, separated in a parallel manner, rotating around their own axis, on and with respect to the fixed base, with these stems being interconnected by at least one flexible intermediate spacer (**15**) and being equipped at their free end with joints (**16**) holding the lamp head, by the fact that each of the said stems (**11**) comprises two goose-neck portions (**17,18**) separated from one another along the same stem and each made up of a flexible tube (**19**) and a sheath (**20**) of each goose-neck (**17,18**) has crosswise slits (**20'**) on two diametrically opposed areas contained between two uninter-

rupted lateral strips (20'') parallel to the axis of the stem, in such a way as to permit the bending of the goose-neck in a



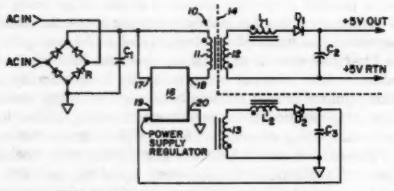
direction orthogonal to the slits and not laterally toward the uninterrupted strips.

5,008,794

REGULATED FLYBACK CONVERTER WITH SPIKE SUPPRESSING COUPLED INDUCTORS

Brooks R. Leman, Santa Clara, Calif., assignor to Power Integrations, Inc., Mountain View, Calif.

Filed Dec. 21, 1989, Ser. No. 455,601
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **5 Claims**



1. In a flyback power supply that includes a transformer having a winding for power input, a first secondary winding for output, a first filter comprising a rectifier and a capacitor, a second secondary winding subject to voltage spikes caused by leakage inductance, and a second filter comprising a rectifier and a capacitor subject to peak charging to the leading edge of said voltage spikes, the improvement comprising:

a first inductor connected in series with the first secondary winding so that current flowing from the first secondary winding passes through the first inductor,

a second inductor connected in series with the second secondary winding so that current flowing from the second secondary winding passes through the second inductor, and

said first and second inductors being coupled inductors wound on the same core with a turns ratio and dot polarity connection set so that voltage developed across the second inductor is slightly higher than the leading edge voltage spike to which the second secondary winding is subject for blocking current flow during the interval of the leading edge of the voltage waveform to cause said second filter to properly peak charge to the plateau of said voltage waveform.

5,008,795

SWITCHED CAPACITOR INTERLEAVED FORWARD POWER CONVERTER

David W. Parsley, Draper, Utah, and Hubert C. Martin, Jr., Temecula, Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 23, 1990, Ser. No. 498,863
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—20 **8 Claims**

1. A DC-to-DC interleaved timing forward converter for applying a first voltage from an input power source to an output load at a second voltage, comprising:

first and second electrical transformers having a predetermined turns ratio,

a capacitor sequentially coupled to both said first and second transformers for filtering said first and second voltages, and

switch means for selectively switching aid first and second transformers alternately and sequentially to said input power source, said capacitor, and said output load, so that said capacitor applies a first potential to said first transoformer during a first time interval when said first transformer is not connected to said input power source by said switch means, and also applies said first potential to said second transformer opposing said first voltage during said first time interval, and so that said capacitor applies a second potential to said second transformer during a second time interval when said second transformer is not connected to said input power source by said switch means and also applies said second potential to said first transformer opposing said first voltage during said second time interval,

said switch means being further arranged so that said first and second transformers are connected to said output load in time interleaved fashion,

said first electrical transformer compring a primary winding and a secondary winding,

said second electrical transformer comprising a primary winding and a secondary winding,

each of said transformers being connected with an opposing polarity sense between said primary winding and said secondary winding, and with the same polarity sense, respectively, with respect to said input power source and with respect to said load,

wherein said switch means further comprises:

first switch means for connecting said primary winding of said first electrical transformer to said input power source in a first position and to said capacitor in a second position, and second switch means for connecting said primary winding of said second electrical transformer to said input power source in a first position and to said capacitor in a second position,

said first and second switch means operatively engaged so as to apply said input power source to said primary winding of said first and second electrical transformers in time phase opposition so as to minimize current deviations of said input power source.

5,008,796

APPARATUS AND METHOD FOR IMPROVING LOAD REGULATION IN SWITCHING POWER SUPPLIES

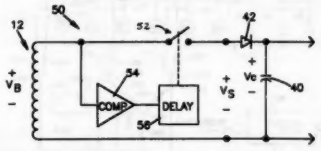
William M. Johnson, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 6, 1990, Ser. No. 533,973
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **22 Claims**

1. A circuit for limiting the effects of overshoot in a transformer of the type having a primary winding and a secondary winding, the secondary winding being coupled to a load and the circuit having an output, the circuit comprising:

winding means operatively connected to the transformer for generating a winding voltage which varies in response to a change in voltage generated across the primary winding;

switching means for selectively communicating the winding voltage to the circuit output, the switching means having the capacity to be disposed in one of a first position and a second position, the winding voltage being communicated to the output of the circuit when the switching means is disposed in the first position; and



switch actuating means responsive to the winding means for disposing the switching means in the first position a predetermined time interval after the winding voltage has exceeded a predetermined reference voltage;

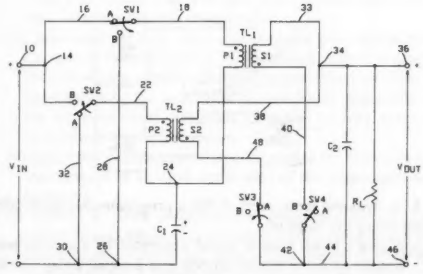
whereby the winding voltage is communicated to the output of the circuit and the effects of overshoot are eliminated in the output voltage of the circuit.

5,008,797

POWER CONVERTER UTILIZING LINE REPLACEABLE UNITS

Sunil Patel; Robert Ligon, and P. John Dhyanchand, all of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 20, 1989, Ser. No. 453,974
Int. Cl.[5] H02M *1/14*
U.S. Cl. 363—43 **13 Claims**



1. A modular line replaceable unit (LRU) connectable to and operable in conjunction with another substantially identical modular LRU to form a stepped-waveform inverter, comprising:

a power switch;

means coupled to the power switch for controlling same including a synchronization input which is responsive to a synchronization signal to synchronize the operation of the power switch to the other modular LRU when the modular LRU's are to be operated in conjunction with one another;

a transformer having a primary winding coupled to the power switch and a secondary winding;

means for packaging the power switch, the controlling means and the transformer as a unit; and

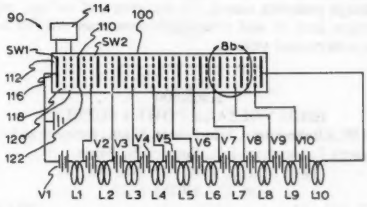
terminals accessible from outside the unit connected to the power switch and the transformer secondary winding including a terminal connected to the synchronization input.

5,008,798

COMPACT HIGH VOLTAGE POWER SUPPLY

Robin T. Harvey, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 21, 1989, Ser. No. 454,675
Int. Cl.[5] H02M *3/18*
U.S. Cl. 363—59 **23 Claims**



2. A high voltage power supply comprising;

energy storage means;

supply means for charging said energy storage means; and

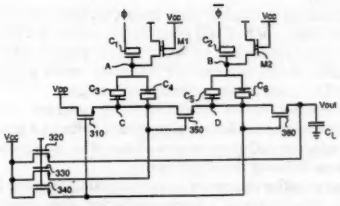
switching means for switching said energy storage means into electrical contact with a load, said switching means including at least one interruptible switch, wherein said interruptible switch is a cold cathode grid-controlled, crossed field plasma switch.

5,008,799

BACK-TO-BACK CAPACITOR CHARGE PUMPS

Antonio J. Montalvo, 850 Cole St., San Francisco, Calif. 94117

Filed Apr. 5, 1990, Ser. No. 505,292
Int. Cl.[5] H02M *3/18*
U.S. Cl. 363—60 **12 Claims**



1. A charge pump apparatus comprising:

first capacitor means for providing capacitance, said first capacitance means having first and second leads, and said first capacitor means being of the type having first and second mutually exclusive states, such that when the voltage on said first lead of said capacitor means exceeds the voltage on said second lead of said capacitor means by a threshold voltage, said capacitor means is in the first state, and said capacitor means is in the second state otherwise;

second capacitor means for providing capacitance, said second capacitor means also having first and second leads, and first and second states as in said first capacitor means, said second lead of said second capacitor means connected to said first lead of said first capacitor means forming a common input lead, said second lead of said first capacitor means and said first lead of said second capacitor means forming a common output lead;

charge pumping means having an input lead and an output lead, the voltage on said output lead increases in response to a signal received on said input lead, said output lead of

said charge pumping means connected to said common input lead of said first and second capacitor means;

diode means for transferring voltage unidirectionally, said diode means having first and second leads, said first lead of said diode connected to said common output lead of said first and second capacitor means, and said second lead of said diode means forming an output lead for said charge pump apparatus, such that current flows from said first lead of said diode means to said second lead of said diode means when the voltage on said first lead of said diode exceeds the voltage on said second lead of said diode; and

voltage clamp means connected to said output lead of said charge pumping means, for ensuring that voltage on said output lead of said charging means does not fall below predetermined voltage.

5,008,800

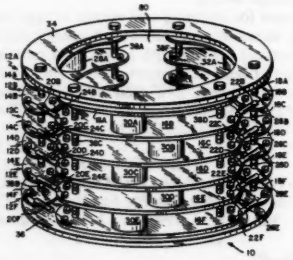
HIGH VOLTAGE POWER SUPPLY

Robert W. Klinkowstein, Winchester, Mass., assignor to Science Research Laboratory, Inc., Somerville, Mass.

Filed Mar. 2, 1990, Ser. No. 488,744

Int. Cl.[5] H02M *7/25*

U.S. Cl. 363—61 **30 Claims**



1. A high voltage multistage cascade rectifier power supply comprising:

equipotential conductor plate means on each side of each of said stages, each of said plate means including a DC potential plate means and an AC potential plate means;

capacitor means between the AC plate means and between the DC plate means defining each stage;

first rectifier means interconnecting selected DC plate means of one conductor plate means defining a given stage to selected AC plate means of the other conductor plate means defining the stage; and

second rectifier means for interconnecting selected DC and AC plate means of a given conductor plate means.

5,008,801

VSCF POWER CONVERSION SYSTEM USING AN OUTPUT AUTOTRANSFORMER

Timothy F. Glennon, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 11, 1989, Ser. No. 448,311

Int. Cl.[5] H02M *7/521*

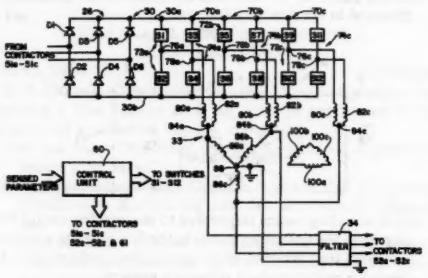
U.S. Cl. 363—132 **11 Claims**

1. A power converter for converting DC power supplied on a DC rail into AC power for an AC load, comprising:

an inverter including first and second switches coupled to the DC rail;

an autotransformer including first and second winding portions having first ends coupled to the first and second switches, respectively, and second ends connected together at a common junction, the autotransformer further including a third winding portion having first and second ends coupled to the common junction and a particular DC potential, respectively;

means for operating the inverter switches to convert the DC potential on the DC rail into AC power at the common junction; and



means coupled between the common junction and the AC load for supplying the AC power to the AC load.

5,008,802

DYNAMIC INPUT METHOD AND APPARATUS FOR PROGRAMMABLE CONTROLLER

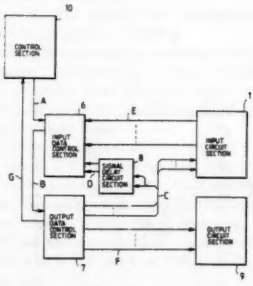
Tatsuo Itoh; Hisayoshi Ito, and Kiyomi Murasaki, all of Aichi, Japan, assignors to Mitsubishi Denki K. K., Tokyo, Japan

Filed Jan. 10, 1989, Ser. No. 295,323

Claims priority, application Japan, Jan. 11, 1988, 63-3380

Int. Cl.[5] G05B *19/04*

U.S. Cl. 364—140 **2 Claims**



1. A dynamic input method for a programmable controller comprising the steps of:

applying a block pointer signal generated by a control section to an input circuit section and a signal delay circuit section;

loading input data into said input circuit section at the block specified by said block pointer signal;

delaying said block pointer signal applied to said signal delay circuit section for a period of time greater than the period corresponding to a delay of time from said application of said block pointer signal to said input circuit section to the output of said block pointer signal from said signal delay circuit section, to form a delayed block pointer signal;

transferring said delayed block pointer signal to said control section;

loading into said control section said input data which has been loaded to said input circuit section and specified by said block pointer signal when said delayed block pointer signal is applied to said control section; and

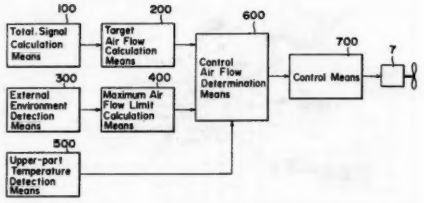
renewing said block pointer signal, by outputting another block pointer signal which points to a different block.

5,008,803

APPARATUS FOR CONTROLLING AN AIR FLOW OF AN AUTOMOBILE AIR-CONDITIONER

Katsumi Iida, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1989, Ser. No. 338,931
Claims priority, application Japan, May 16, 1988, 63-118882
Int. Cl.[5] F25B *29/00*; G05B *13/02*
U.S. Cl. 364—148 3 Claims



1. An apparatus for controlling air flow in an air-conditioner of a motor vehicle, said apparatus comprising:

(a) total signal calculation means for calculating a thermal load of the air-conditioner based on at least a desired temperature of the air inside a passenger compartment of the motor vehicle and on a temperature representative of that of the air inside the passenger compartment, and for issuing a total signal indicative of the calculated thermal load;

(b) target air flow calculation means operatively connected to said total signal calculation means for receiving said total signal and for calculating, based on said total signal, a target air flow to be supplied to the passenger compartment;

(c) external environment detection means for detecting an environmental condition outside the passenger compartment which exerts an influence upon an air-conditioning state of the passenger compartment;

(d) maximum air flow limit calculation means operatively connected to said external environment detection means for calculating a limit value for the maximum air flow to be supplied to the passenger compartment, according to the environmental condition detected by said external environment detection means;

(e) upper-part temperature detection means for detecting the temperature of air at an upper part of the passenger compartment;

(f) control air flow determination means operatively connected to said upper-part temperature detecting means for establishing a control mode in which the air flow in the air-conditioner is regulated to said target air flow until temperature of the air at the upper part of the passenger compartment, as detected by said upper-part temperature detecting means, becomes lower than a predetermined temperature, and operatively connected to said maximum air flow limit calculation means for substituting said target air flow with said limit value calculated by said maximum air flow limit calculation means to establish a control mode in which the air flow in the air-conditioner is regulated to said limit value once the temperature of the air at the upper portion of the passenger compartment, as detected by said upper-part temperature detection means, has become lower than the predetermined temperature; and

(g) control means for controlling the rotational speed of a blower of the air-conditioner according to the control mode established by said air flow determination means.

5,008,804

ROBOTIC TELEVISION-CAMERA DOLLY SYSTEM

Gary B. Gordon, Saratoga, Calif., and Robert R. Gonnelli, Valley Cottage, N.Y., assignors to Total Spectrum Manufacturing Inc., Valley Cottage, N.Y.

Continuation of Ser. No. 228,933, Jun. 23, 1988, Pat. No. 4,959,798. This application Aug. 30, 1990, Ser. No. 574,852
Int. Cl.[5] F16M *3/00*
U.S. Cl. 364—167.01 17 Claims

1. A positioning system for moving a dolly member along a substantially planar surface, said dolly member having a rotation axis normal to said planar surface and a translation axis parallel to said planar surface, said system comprising:

a target means for defining a reference point and a reference direction on said planar surface;

driving means for moving said dolly member on said planar surface;

detection means affixed to said dolly member for detecting said target means; and

processor means coupling said detection means to said driving means, said processor means

controlling said driving means to move said dolly member on said planar surface by dead reckoning to a vicinity of said target means; and

in response to an output of said detecting means, controlling said driving means to move said dolly member to bring the translation axis thereof parallel to the reference direction defined by said target means, and to bring the rotation axis of said dolly member into coincidence with the reference point defined by said target means.

5,008,805

REAL TIME, FAIL SAFE PROCESS CONTROL SYSTEM AND METHOD

Carolyn A. B. Fiebig, Burtonsville; Mike R. Fuqua, Frederick; Suresh K. Gursahaney, Gaithersburg; Gregg M. Margosian, Germantown, and Mark H. Weiss, Gaithersburg, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1989, Ser. No. 389,023
Int. Cl.[5] G06F *11/20*
U.S. Cl. 364—184 15 Claims

1. A fail safe data processing system for real time control of a plurality of devices, comprising:

a LAN having a plurality of devices coupled thereto, for communicating device control messages to said plurality of devices;

a system clock for generating a periodic time base for said system;

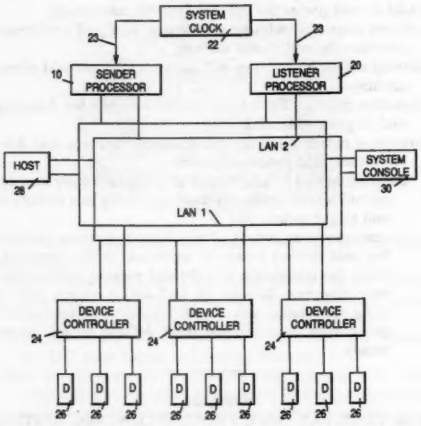
a first data processor operating in a sender mode, having a clock input coupled to said system clock, coupled to said LAN and having a memory storing a first control schedule table, a processor status table and a control program, for sequentially executing instruction steps in said control program for accessing data from said first control schedule table and generating a first sequence of device command messages, and outputting said messages to said LAN

for transmission to said plurality of devices and for updating a health status of said first processor in said processor status table;

a second data processor operating in a listener mode, having a clock input coupled to said system clock, coupled to said LAN and having a memory storing a second control schedule table and a control program, for sequentially executing instruction steps in said control program therein for accessing data from said second control schedule table and generating a second sequence of device command messages which are the same as said first sequence, and buffering said second sequence of device command messages in a listener data buffer;

said second data processor receiving said first sequence of command messages on said LAN and transferring said first sequence from said LAN to a receive data buffer in said second data processor;

a compare means in said second data processor coupled to said listener data buffer and to said receive data buffer, for comparing said first sequence of device command messages with said second sequence of device command messages;



a listener takeover means in said second data processor coupled to said compare means, for outputting a takeover request on said LAN to said first data processor when said first sequence of device command messages are not the same as said second sequence of device command messages, said listener takeover means further starting a takeover interval timer in said second data processor to expire at a predetermined timeout value;

a takeover response means in said first data processor coupled to said LAN, for receiving said takeover request and in response thereto, checking said processor status table to determine whether said first processor is able to continue operating in said sender mode;

said takeover response means outputting through said LAN to said second processor an agreement message if said processor status table indicates that said first processor is not able to continue said sender mode, said listener takeover means in said second data processor, in response thereto, changing said second processor to said sender mode, accessing said second sequence of device command messages in said listener data buffer and outputting over said LAN, device command messages to said plurality of devices.

5,008,806

METHOD OF CREATING NC DATA FOR MACHINING CURVED SURFACES

Masaki Seki; Koji Samukawa, and Osamu Hanaoka, all of Tokyo, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

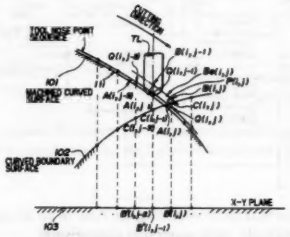
PCT No. PCT/JP88/00386, § 371 Date Dec. 12, 1988, § 102(e) Date Dec. 12, 1988, PCT Pub. No. WO88/08560, PCT Pub. Date Nov. 3, 1988

PCT Filed Apr. 20, 1988, Ser. No. 290,288

Claims priority, application Japan, Apr. 21, 1987, 62-98151

Int. Cl.[5] G05B *19/42*; G06F *15/46*

U.S. Cl. 364—191 **3 Claims**



1. A method of automatically creating NC data in an NC data creating apparatus and machining a curved surface, comprising:

a first step of inputting data specifying a first three-dimensional surface and data specifying a second three-dimensional surface that defines a cutting boundary in a depth direction of said first three-dimensional surface;

a second step of generating a first plurality of point-sequence paths defining said first three-dimensional surface and generating a second plurality of point-sequence paths that define said second three-dimensional surface;

a third step of determining a tool nose point sequence corresponding to a point sequence on said first curved surface based on said first plurality of point-sequence paths;

a fourth step of determining a projected point sequence obtained by projecting said tool nose point sequence onto a reference plane, and determining a projected point sequence on said second curved surface obtained by projecting said first-mentioned point sequence onto said second curved surface;

a fifth step of checking if a line segment connecting the tool nose point sequence and a line segment connecting the projected point sequence on said second curved surface intersect and if they do intersect, determining a point of intersection P(i,j);

a sixth step of creating NC data up to a point of said intersection P(i,j) if the line segments intersect; and

a seventh step of subsequently machining a curved surface by performing a pick-feed using the NC data.

5,008,807

DATA PROCESSING APPARATUS WITH ABBREVIATED JUMP FIELD

Steven D. Krueger, Dallas, and Michael J. Amundsen, Austin, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 628,071, Jul. 5, 1984, abandoned. This application Apr. 27, 1990, Ser. No. 517,979

Int. Cl.[5] G06F *9/32, 9/38, 9/26*

U.S. Cl. 364—200 **10 Claims**

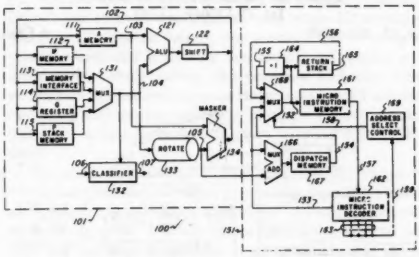
1. A data processing apparatus comprising:

an instruction memory for storing therein a sequence of multiple instruction words, each instruction word specifying a data processing function, each of said instruction words having a limited control field for specifying preselected next possible instruction words, wherein said lim-

ited control fields is an instruction of said multiple instruction words;

a data processing unit for performing data processing functions on data words under control of recalled data instruction words;

an instruction control means for controlling the recall of instruction words from said instruction memory, said instruction control means determining the next sequential instruction to be recalled from said instruction memory



based upon the current instruction word in combination with control parameters for said data processing apparatus;

an instruction decode means connected to said data processing unit and to said instruction control means for decoding instruction words recalled from said instruction memory by said instruction control means, wherein said instruction decode means recalls the next instruction word based upon the value found in the limited control field of the current instruction.

5,008,808

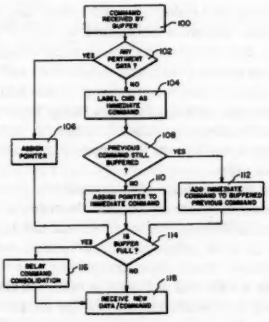
CONSOLIDATION OF COMMANDS IN A BUFFERED INPUT/OUTPUT DEVICE

William J. Fries, Merritt Island; Donald Kleinschnitz, and T. Craig Nelson, both of Melbourne, all of Fla., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jun. 23, 1988, Ser. No. 210,719

Int. Cl.[5] G06F *9/318, 3/12*

U.S. Cl. 364—200 **7 Claims**



1. In a data processing system which includes a host computer, a channel coupling said host computer to a line printer, and a buffer within said line printer for buffering commands received across said channel from said host computer, wherein said received commands optionally include a data field containing data to be output by said line printer, a method of consolidating said commands in said line printer comprising the steps of:

checking each said command received by said buffer to determine whether it includes output data for said line printer;

assigning a pointer in said buffer to each said command not having output data associated therewith that is received prior to a command having output data associated therewith, each subsequent said command not having output data associated therewith that is received prior to said command having output data associated therewith being assigned a pointer lower in priority than the pointer assigned to an immediately previously buffered command not having output data associated therewith;

assigning a pointer in said buffer to a first of said received commands having output data associated therewith, said pointer assigned to said first received command being lower in priority than the pointer assigned to said immediately previously buffered command not having output data associated therewith;

combining each said check command not having output data with said first command;

printing said output data; and

executing said combined commands.

5,008,809

DATA PROCESSOR CAPABLE OF OUTPUTTING CODES REPRESENTING DISPLAYED PATTERNS

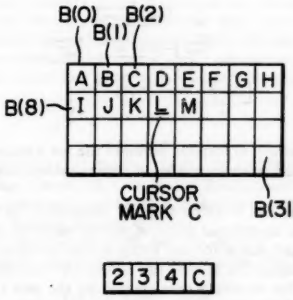
Katsumi Matsaki, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 719,030, Apr. 3, 1985, abandoned, which is a continuation of Ser. No. 351,457, Feb. 23, 1982, abandoned. This application Jan. 12, 1987, Ser. No. 4,849

Claims priority, application Japan, Mar. 2, 1981, 56-29542

Int. Cl.[5] G06F *3/14*

U.S. Cl. 364—200 **8 Claims**



1. An information processing apparatus comprising:

keyboard means for entering character information, said keyboard means having manual instruction means for recalling character information;

memory means for storing character information entered from said keyboard means, said memory means storing character information in the form of encoded signal information;

converting means connected to said memory means for converting character information stored in said memory means to corresponding character pattern information;

display means connected to said converting means for displaying the character pattern information converted from corresponding character information by said converting means; and

control means connected to said keyboard means for recalling encoded signal information corresponding to character pattern information being displayed by said display means and for displaying said character information in the form of encoded signal information on said display means when instructed by said manual instruction means, said

control means recalling said character information in the form of corresponding encoded signal information stored in said memory means after said character pattern information is displayed by said display means, said control means comprising cursor control means for specifying particular character pattern information being displayed by said display means for which the corresponding encoded signal information is to be displayed, said cursor control means specifying said particular character pattern with a cursor.

5,008,810

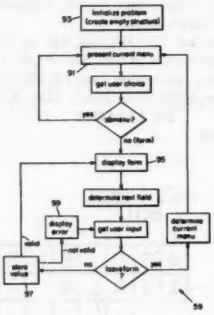
SYSTEM FOR DISPLAYING DIFFERENT SUBSETS OF SCREEN VIEWS, ENTERING DIFFERENT AMOUNT OF INFORMATION, AND DETERMINING CORRECTNESS OF INPUT DEPENDENT UPON CURRENT USER INPUT

William C. Kessel, Watertown; John L. Laclaire, Cambridge; Andrew L. Lui, West Newton; Michael H. Locke, Lakeville, and Herbert I. Britt, Cambridge, all of Mass., assignors to Process Modeling Investment Corp., Wilmington, Del.

Filed Sep. 29, 1988, Ser. No. 251,514

Int. Cl.[5] G06F *15/403, 15/46*

U.S. Cl. 364—200 **20 Claims**



19. A method of forming an input file for a computer controlled model process simulation device, comprising the steps of:

displaying on a video display, controlled by computer means, an ordered series of screen views to provide an arranged course for user entry of data for forming a complete input file, at least one screen view providing input fields for receiving data entered by the user through an input device coupled to the computer means;

providing to a user on each screen view a state of completeness and prompts directing the user through the arranged course;

determining correctness of data currently entered by the user for one input field according to data which was entered by the user for other input fields, and if correct, updating the state of completeness provided by each screen view, a complete state being established when a complete and error free input file is formable from the user entered data, amount of user entered data to form a complete input file being a function of content of data entered by the user along the arranged course;

forming a changeable subset of the ordered series of screen views in response to the updating of the state of completeness, the subset providing that portion of the arranged course for user entry of data necessary to enable a complete input file to be formed with data entered by the user thus far;

displaying the subset upon user command;

updating the state of completeness with each user entry of data in a screen view of the subset; and

changing the subset in response to each updating of the state of completeness.

5,008,811

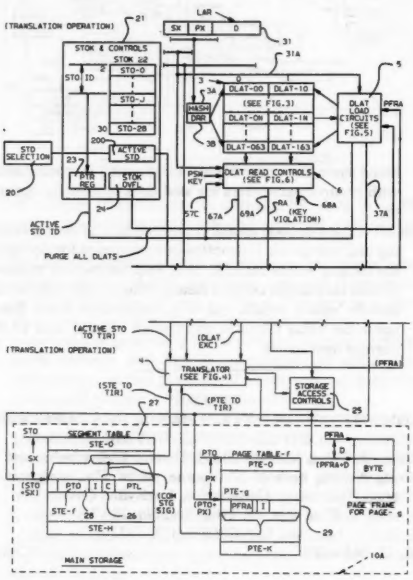
CONTROL MECHANISM FOR ZERO-ORIGIN DATA SPACES

Casper A. Scalzi, Poughkeepsie, and Richard J. Schmalz, Wappingers Falls, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 10, 1988, Ser. No. 154,688

Int. Cl.[5] G06F *12/00*

U.S. Cl. 364—200 **6 Claims**



1. In a central processing complex comprising a CPU, main storage, system resources connected to the CPU and to the main storage, and an operating system supporting a plurality of virtual address spaces containing instructions and data, each of said virtual address spaces comprising virtual addresses at least one range of said virtual addresses being termed a segment, said segment having an included range of virtual addresses termed a page, a mechanism for supporting two distinct virtual address space types,

a program address space type comprising one or more program address spaces in which at least one common range of virtual addresses represents virtual storage that is common to all such program address spaces, and

a data address space type comprising one or more data spaces in which said at least one common range of virtual addresses represents virtual storage unique to each data space,

said mechanism comprising:

(a) storage access control means for accessing main storage using a real address;

(b) translator means for translating any supplied virtual address, supplied by a supplying one of said virtual address spaces and associated with a first one of said virtual address spaces, into an associated real address for use by said storage access control in accessing main storage,

(c) segment table descriptor (STD) selector means, within

said CPU, for associating an STD with said any supplied virtual address,

(d) tale means in main storage comprising a segment table, located by each STD, said segment table having segment table entries, each of said segment table entries locating a page table, said table means usable by said translator means in translating said any supplied virtual address,

(e) a dynamic lookaside table (DLAT) coupled to said storage access control and having DLAT entries comprising a DLAT virtual address associated with a particular virtual address space, a corresponding previously translated DLAT real address, and segment table origin ID having a plurality of possible values, one possible value being a common indicator indicating that the DLAT virtual address in the entry having the common indicator falls within said at least one common range, said DLAT entries usable by said storage access control for bypassing said translator means for translating any supplied virtual address,

(f) a data space indicator associated with said any supplied virtual address and identifying said any supplied virtual address as being associated with either any one of said one or more program address spaces (the being said to be "off") or any one of said one or more data spaces (then being said to be "on"), and

(g) DLAT read control means, coupled to said DLAT, and responsive to said data space indicator, for directly obtaining from the DLAT the associated real address for use by said storage access control means, thus permitting bypass of the translator means when said data space indicator is "off" if:

(1) said any supplied virtual address matches the DLAT virtual address of a first one of said DLAT entries, and said DLAT entry has the common indicator, so that said first one of said DLAT entries for said any supplied virtual address is shared by all of said program address spaces,

but directly obtaining from the DLAT the associated real address thus permitting bypass of the translator means when said data space indicator is "on" only if:

(1) said any supplied virtual address matches the DLAT virtual address of a second one of said DLAT entries, and

(2) the particular virtual address space associated with the DLAT virtual address of the second one of said DLAT entries is the data space containing said any supplied virtual address, so that the second one of said DLAT entries cannot be shared among said data spaces, even if it has the common indicator.

5,008,812

CONTEXT SWITCHING METHOD AND APPARATUS FOR USE IN A VECTOR PROCESSING SYSTEM

Dileep P. Bhandarkar, Shrewsbury, Mass.; Dave Cutler, Bellevue, Wash.; Wayne Cardoza, Merrimack, N.H.; Rich Witek, Littleton, Mass., and Dave Orbits, Redmond, Wash., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 18, 1988, Ser. No. 170,399

Int. Cl.[5] G06F *9/46, 15/16, 15/347*

U.S. Cl. 364—200 **13 Claims**

1. A multitasking data processing system for alternately executing portions of a plurality of processes, said processes consisting of sequences of instructions which can include vector instructions involving data processing operations on vector quantities and scalar instructions involving data processing operations on nonvector quantities, the one of said plurality of processes currently being executed by said data processing system being called a current process, and the data processing system comprising:

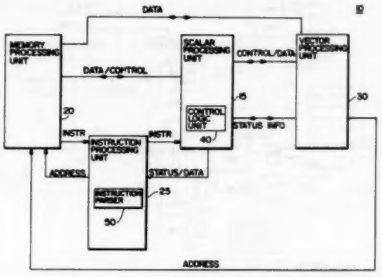
a memory having a plurality of portions, each of the portions corresponding to a different one of said processes;

scalar processing means for executing scalar instructions;

vector processing means for executing vector instructions in said processes, said vector processing means including vector state means for storing state information describing an execution state of said vector processing means;

instruction decoding means, coupled to said scalar processing means and said vector processing means, for identifying and routing the scalar instructions and vector instructions in the processes to said scalar processing means and said vector processing means, respectively;

vector instruction identifying means, coupled to said instruction decoding means, for recognizing when said current process is about to execute one of said vector instructions;



last user indicating means for identifying as a last vector user process the one of said processes for which said vector processing means most recently executed a vector instruction; and

saving means, coupled to said vector instruction identifying means and said last user indicating means, for causing said data processing system to store said vector state information in said memory at one of the locations corresponding to the last vector user process when said vector instruction identifying means recognizes both that said current process is about to execute a vector instruction and that said last vector user process is different from said current process.

5,008,813

MULTI-CACHE DATA STORAGE SYSTEM

David P. Crane; Terence M. Cole, both of Reading, and Geoffrey Poskitt, Camberley, all of England, assignors to International Computers Limited, London, England

Filed Oct. 21, 1988, Ser. No. 261,033

Claims priority, application United Kingdom, Dec. 5, 1987, 8728494

Int. Cl.[5] G06F *13/00*

U.S. Cl. 364—200 **2 Claims**

1. A cache unit comprising:

(A) means for receiving a virtual address comprising first, second and third portions,

(B) means for receiving an input physical address comprising first and second portions,

(C) a data cache RAM for holding a plurality of data items,

(D) first multiplexing means for selecting one of the following to address the data cache RAM:

(i) the first and second portions of the virtual address,

(ii) the first portion of the input physical address and a reconstructed second portion of the virtual address,

(E) a memory management unit for translating the virtual address to form an output physical address comprising first and second portions, the first portion of the output physical address being equal to the first portion of the virtual address, and the second portion of the output physical address being derived from the second and third portions of the virtual address,

(F) a plurality of tag RAMS, each of which holds a plurality of physical address tags, each tag RAM having address, data and write enable inputs, and having a HIT output

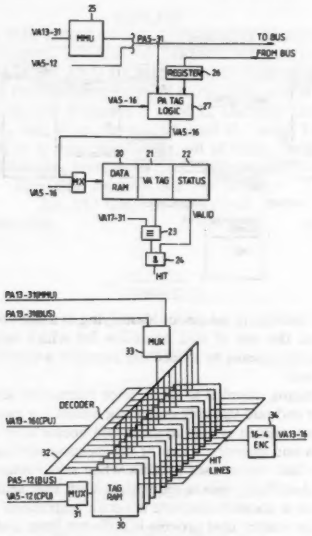
which indicates a match between data applied to the data input and a currently addressed tag in that tag RAM,

(G) second multiplexing means for selecting one of the following to be applied in parallel to the address inputs of all the tag RAMs:

(i) the first portion of the virtual address,

(ii) the first portion of the physical address,

(H) third multiplexing means for selecting one of the following to be applied in parallel to the data inputs of all the tag RAMs:



(i) the second portion of the output physical address,

(ii) the second portion of the input physical address,

(I) a decoder having an input connected to receive the second portion of the virtual address and having a plurality of outputs connected to the write enable inputs of the respective tag RAMs, and

(J) an encoder having a plurality of inputs connected to receive the HIT outputs of the respective tag RAMs, and having an output which supplies said reconstructed second portion of the virtual address.

5,008,814

METHOD AND APPARATUS FOR UPDATING SYSTEM SOFTWARE FOR A PLURALITY OF DATA PROCESSING UNITS IN A COMMUNICATION NETWORK

Ashish Mathur, Sunnyvale, Calif., assignor to Network Equipment Technologies, Inc., Redwood City, Calif.

Filed Aug. 15, 1988, Ser. No. 232,293

Int. Cl.[5] G06F *15/00, 11/00*

U.S. Cl. 364—200 **21 Claims**

12. In a communication network having a plurality of processing units distributed among multiple nodes linked by communication channels where each of the processing units is coupled to at least one memory unit and where each memory unit has a status identification, maintenance apparatus for updating system software among the processing units from a first version to a second version comprising:

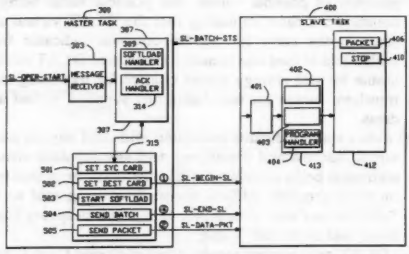
first means in a source node for receiving the second version;

second means coupled to the first means for transmitting the second version through the network to one or more specified memory units in one or more other nodes, including means for assigning a first status to the specified memory units, and means for changing the first status to a second status upon successfully communicating the second version thereto;

for at least one of said other nodes,

third means for initiating a trial use of the second version in a processing unit of the one of said other nodes, including means for changing the status of memory units containing the second version to a third status;

fourth means for detecting whether the second version operates successfully or fails to operate successfully during the trial use;



said fourth means including, in response to a detection that the second version fails to operate successfully during the trial use means, for restoring the one of said other nodes to the first version, including means for changing the memory units containing the second version to the second status; and

fifth means, in response to a detection that the second version operates successfully during the trial use, for designating the second version as a preferred version of system software, including means for changing the status of the memory units containing the second version to a fourth status.

5,008,815

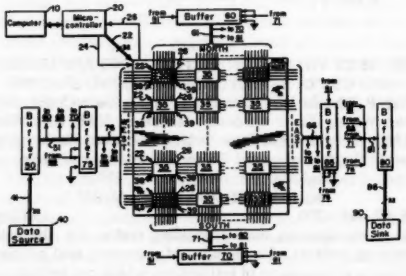
PARALLEL PROCESSOR

W. Daniel Hillis, Brookline, Mass., assignor to Thinking Machines Corporation, Cambridge, Mass.

Continuation of Ser. No. 499,474, May 31, 1983, Pat. No. 4,814,973. This application Jun. 27, 1988, Ser. No. 184,739

Int. Cl.[5] G06F *15/16*

U.S. Cl. 364—200 **16 Claims**



1. Message switching apparatus comprising:

a plurality of message inputs on which messages are received;

a plurality of message outputs on which messages are transmitted;

storage means for storing said messages, said storage means having a plurality of inputs and an equal number of outputs;

an array of logic cells equal in number to a product of the

number of message inputs and the number of storage means inputs, said array of logic cells being organized in two dimensions hereinafter referred to as rows and columns, the number of rows equaling the number of storage means inputs and the number of columns equaling the number of message inputs.

each logic cell except those at the edges of the array comprising:

(a) means for receiving a message from a cell in an adjacent row,

(b) means for receiving a message from a cell in an adjacent column,

(c) means for transmitting a message to a cell in an adjacent column,

(d) means for transmitting a message to a cell in an adjacent row,

(e) means for transmitting a message to one of said message outputs, and

(f) logic means for steering a message to an adjacent row, and adjacent column or a message output,

each logic cell in one of the rows at the edge of the array comprising:

(a) means for receiving a message from one of said plurality of message inputs,

(b) means for receiving a message from a cell in adjacent column,

(c) means for transmitting a message to a cell in an adjacent column,

(d) means for transmitting a message to a cell in an adjacent column,

(e) means for transmitting a message to one of said message outputs, and

(f) logic means for steering a message to an adjacent row, an adjacent column or a message output.

5,008,816

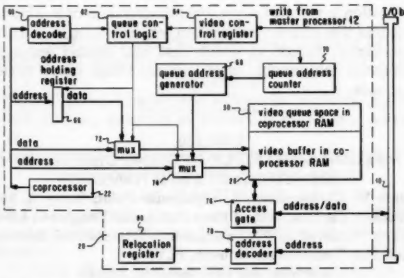
DATA PROCESSING SYSTEM WITH MULTI-ACCESS MEMORY

Richard G. Fogg, Jr., and John W. Irwin, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1987, Ser. No. 117,715

Int. Cl.[5] G06F *12/00, 15/16, 13/10*

U.S. Cl. 364—200 **8 Claims**



1. A memory system comprising:

a first plurality of memory locations for storing information in response to access commands having addresses within a first address range;

a second plurality of memory locations for storing information within a second address range; and

means for writing information in said first plurality of memory locations in response to write commands having addresses within said first address range and, within a same write cycle, writing each write command address in said second plurality of memory locations.

5,008,817

METHOD AND APPARATUS FOR TRANSFERRING ADDRESSES AND INFORMATION IN A BUFFER MEMORY AND A COMMON MAIN STORAGE DEVICE

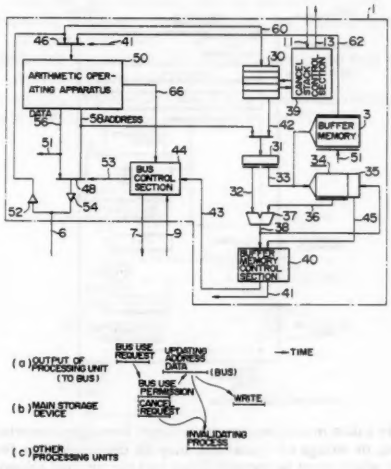
Masabumi Shibata; Akira Ishiyama, and Takeshi Takemoto, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1988, Ser. No. 222,841

Claims priority, application Japan, Jul. 24, 1987, 62-183721

Int. Cl.[5] G06F *9/00*

U.S. Cl. 364—200 **17 Claims**



1. An information processing apparatus comprising:

a bus;

a main storage device connected to said bus, said main storage device containing updatable information and addresses corresponding to said information,

a plurality of processing units connected to said bus such that said processing units continuously monitor the bus, each one of said processing units including a buffer memory having copies of selected portions of the updatable information and the corresponding addresses and means for updating the information; and,

a plurality of signal lines for said each one of said processing units, said signal lines connecting said processing units and said main storage for passing signals between said processing units and said main storage, without requiring access to said bus, said plurality of signal lines including:

a bus use request line, for sending a bus use request signal from a processing unit of said processing units to said main storage in order to pass updated information from said processing unit to said main storage over said bus;

a cancel request line for sending a cancel request signal from said main storage to each of said processing units other than said processing unit which sent said bus use request signal, in order to invalidate buffer memory information corresponding to the address of the updated information, wherein each of said processing units receiving said cancel request signal checks the buffer memory for an address corresponding to the address of the updated information and invalidates the information corresponding to that address, whereby invalidation of information in each of said processing units receiving said cancel request signal is obtained without the requirement of accessing the bus to send at least one of said bus use request signal and said cancel request signal.

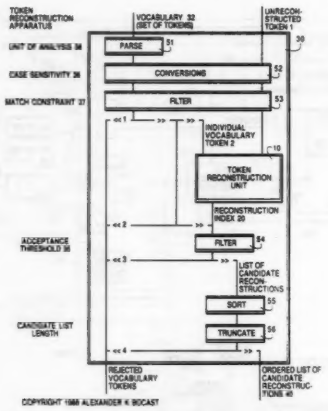
5,008,818

METHOD AND APPARATUS FOR RECONSTRUCTING A TOKEN FROM A TOKEN FRAGMENT

Alexander K. Bocast, 2206 S. Dinwiddie St., Arlington, Va. 22206, assignor to Alexander K. Bocast, Arlington, Va.

Filed Apr. 24, 1989, Ser. No. 342,085
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—200 **21 Claims**

MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 37 Pages)



1. In a data processing system wherein messages comprising tokens, or strings of characters, may be corrupted into fragments which must be reconstructed into the original tokens, a method of reconstructing an original token from an input string containing at least one unreconstructed token consisting of at least one character, a character being at least one symbol for a letter, a numeral, a punctuation element, or other element of a token, the unreconstructed token having a first end and second end, the method comprising the steps of iteratively calculating and recording at least two indices for the unreconstructed token and at least two indices for a comparison vocabulary string having at least one character, the vocabulary string having a first end and a second end, the iterative calculation involving comparisons of characters in the unreconstructed token with characters in the vocabulary string, at least one of the indices serving both to point to a character of the unreconstructed token for comparison with a character of the vocabulary string and to indicate a position within the unreconstructed token from either the first end or the second end of the unreconstructed token, the position being determined by a series of successful character comparisons, a successful character comparison occurring when a character in the unreconstructed token matches a character in the vocabulary string, the at least one index being revised upon each successful character comparison, whereby a measure of likelihood that the vocabulary string is a reconstruction of the original token is determined.

5,008,819

MEMORY SPACED ARRAY

George G. Gorbatenko, 924 Sierra La. NE., Rochester, Minn. 55904

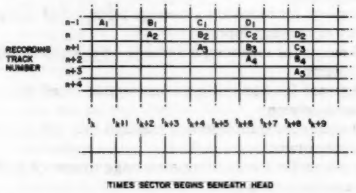
Continuation of Ser. No. 105,872, Oct. 7, 1987, abandoned.
This application Jul. 19, 1989, Ser. No. 383,235
Int. Cl.[5] G06F *7/00, 13/00*
U.S. Cl. 364—200 **78 Claims**

1. A method for storing discrete information representations at, and retrieving such discrete information representations from, any of a plurality of storage locations in an alterable state material provided in a storage means with said plurality of storage locations including first and second sequential pluralities of said storage locations therein each of which has its said storage locations arranged in a sequential order, said storage means being capable of permitting access successively to said storage locations in each of said first and second sequential pluralities thereof only in its said sequential order for purposes of such storing and retrieving and, after permitting access to a selected said storage location in one of said first and second sequential pluralities thereof for such a purpose, being capable of permitting that next following access for such a purpose to a corresponding said storage location in that other said sequential plurality remaining which is first available for such a following access, said method comprising:

receiving at a first input in said storage means a first sequence of said discrete information representations;

storing said first sequence of discrete information representations in said first sequential plurality of storage locations in said alterable state material;

receiving at a second input in said storage means a second sequence of said discrete information representations



where each said discrete information representation in said first sequence thereof, if retrieved by said storage means and provided at a first output thereof, is to have either of a selected one of (i) its following said discrete information representation in said first sequence, if any, and (ii) a corresponding said discrete information representation in said second sequence, directly retrievable thereafter and provided at a second output of said storage means; and

storing each of said discrete information representations in said second sequence thereof in a said storage location selected from that portion of those said storage locations in said second sequential plurality thereof included in its sequential order onward from that said storage location therein corresponding, as aforesaid, to that said storage location in said first sequential plurality thereof in which is stored that discrete information representation in said first sequence thereof to which that said second sequence discrete information representation being stored corresponds.

5,008,820

METHOD OF RAPIDLY OPENING DISK FILES IDENTIFIED BY PATH NAMES

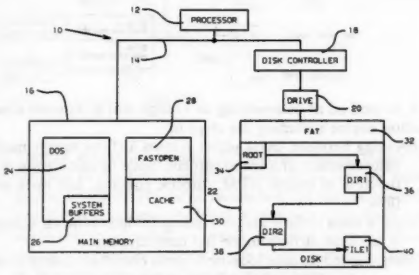
Kenneth W. Christopher, Jr., Lighthouse Point; Barry A. Feigenbaum; Jin Kim, both of Boca Raton, and Douglas C. Love, Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1987, Ser. No. 32,210
Int. Cl.[5] G06F *12/02, 15/40*
U.S. Cl. 364—200 **10 Claims**

1. A method of operating a personal computer system having a first disk drive including a first disk in which is stored a tree structure of directories and files, said directories and said files being stored in different clusters on said disk, each directory containing a list of directory entries identifying files and directories stored therein, each directory entry for a directory containing information including a directory name and starting cluster where such directory is stored on said disk, each directory entry for a file containing information including a file

name and starting cluster where such file is stored on said disk, said data processing system further comprising a main memory for storing data, said data stored in said memory being accessible at a rate substantially faster than the rate at which data stored on said disk can be accessed, said method comprising the steps of:

(a) creating in said main memory a first cache containing a predetermined number of cache entries for storing a history of paths to most recently used files in said disk drive, said cache entries including one cache entry for each file and one cache entry for each directory to such file, a cache entry for a directory containing the directory entry for such directory, a cache entry for a file containing the directory entry for such file;



(b) in response to an initial request to open a given file nested in a path of directories where such request identifies said given file by its file name and each of said directories in said path by their directory names, accessing said disk at least once for each directory and at least once for said given file and reading from said disk the directory entries corresponding to said given file and to each directory in said path to said given file;

(c) storing said directory entries read in step (b) in cache entries in said cache and forming a chain to create a history of said path to said given file;

(d) in response to a subsequent request to open said given file, searching through said cache entries in said chain to locate said directory entry therein for said given file; and

(e) opening said given file by using said directory entry located in step (d).

5,008,821

COMPUTERIZED PROCESS AND SYSTEM FOR ASSIGNING AND DELIVERING FEED TO ANIMALS IN A FEEDLOT

William C. Pratt, Canyon, and William D. McKillip, Amarillo, both of Tex., assignors to Micro Chemical, Inc., Amarillo, Tex.

Continuation-in-part of Ser. No. 85,073, Aug. 12, 1987. This application Jan. 26, 1988, Ser. No. 148,685

Int. Cl.[5] A01K *5/02*

U.S. Cl. 364—413.01 **23 Claims**

1. A system for assigning feed to feed bunks in a feedlot, comprising:

computer means programmed for receiving, storing, and displaying feed consumption data for each of a plurality of animal pens in the feedlot;

data entry means accessible at each of said animal pens for entering feed assignment data for the feed bunk associated with an animal pen and for communicating said assignment data to the computer means; and

display means accessible at each of said animal pens and communicating with the computer means for displaying the feed consumption data for the animal pen;

identification means associated with each animal pen for identifying the animal pen;

the data entry means including means for reading the identification means.

13. A process for assigning feed to feed bunks in a feedlot, comprising:

driving to an animal pen having an associated feed bunk for which feed is to be assigned;

entering pen identification data for the pen in a computer programmed to store data about each pen;

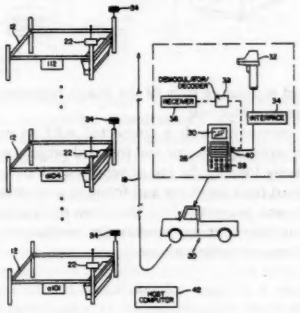
observing the condition of the feed bunk for making a feed assignment;

entering feed assignment data for the feed bunk into the computer for recording with the pen identification;

repeating the above steps until feed has been assigned to each feed bunk; and

gathering the entered data for determining the feed to be delivered to the animal pens;

the entering of pen identification data comprising reading the pen identification on the animal pen by machine.



17. A process for delivering feed rations to feed bunks in a feedlot, comprising:

storing in a computer for selective display feed delivery data for each of a plurality of animal pens in the feedlot, each pen having an associated feed bunk, said data including the type of feed ration for each pen;

loading a feed truck with a ration quantity for said delivery;

driving to one of the animal pens for delivering the ration quantity;

entering in the computer pen identification data;

checking via the computer the pen identification data against the type of ration to determine if the ration type is to be dispensed to the pen;

monitoring the ration quantity as it is being dispensed into the feed bunk associated with the pen;

repeating the above steps for each animal pen; and

recording for each pen the actual quantities dispensed;

the entering of pen identification data comprising reading the pen identification on the animal pen by machine.

5,008,822

COMBINED HIGH SPEED BACKPROJECTION AND FORWARD PROJECTION PROCESSOR FOR CT SYSTEMS

Carl J. Brunnett, Willoughby Hills; Allen B. Zachary, Cleveland, and Holly C. Heiple, Cleveland Hts., all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Filed Nov. 25, 1988, Ser. No. 276,859

Int. Cl.[5] G06F *15/42*

U.S. Cl. 364—413.21 **18 Claims**

1. A diagnostic imaging system comprising:

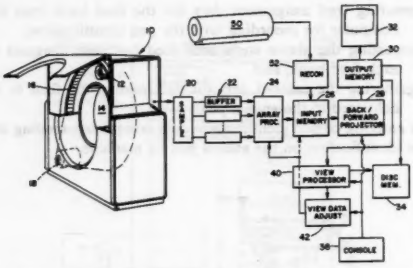
a CT scanner for generating CT views of radiation intensity data, each CT view including view data elements which correspond to an intensity of radiation along a corresponding ray through a scan circle;

an array processor means for processing a plurality of the CT views;

a non-invasive examination means for generating diagnostic data indicative in interior regions of a subject;

an image reconstruction means for reconstructing the diagnostic data into an image representation;

a combined backprojector and forward projector means for backprojecting views into an image representation and for



forward projecting data of the image representation into view representations;

an input memory which is connected with an input of the combined backprojector and forward projector means for selectively loading the image representation data into the combined backprojector and forward projector means to be forward projected into the view representations, the input memory being operatively connected with the image reconstruction means.

5,008,823

METHOD AND APPARATUS FOR DETERMINING FAILURE OF VEHICLE STEERING SENSING DEVICE

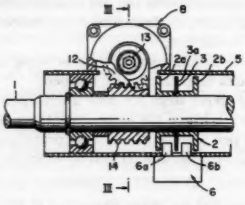
Akira Takahashi, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1990, Ser. No. 491,204

Claims priority, application Japan, Mar. 14, 1989, 1-61442

Int. Cl.[5] G01M *19/00;* **B62D** *1/00*

U.S. Cl. 364—424.03 **5 Claims**



1. A method of determining a failure of a steering sensing device of a steering shaft mounted on a motor vehicle, comprising the steps of:

detecting steering angle of the steering shaft from a neutral position by a steering angle sensor;

sensing a steering speed of the steering shaft by means of a steering speed sensor;

calculating a variation with time of the steering angle detected by the steering angle sensor;

comparing the variation with the steering speed; and

determining a failure of at least one of the steering angle sensor and the steering speed sensor when the difference or a ratio between the variation and the steering speed is outside a predetermined range.

5,008,824

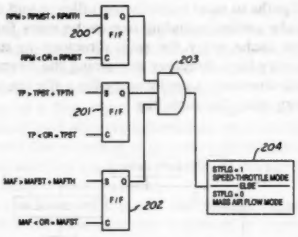
HYBRID AIR CHARGE CALCULATION SYSTEM

Walter F. Clark, Plymouth, and Bor-Dong Chen, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 19, 1989, Ser. No. 368,001

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—431.05 **6 Claims**



1. A method of determining air charge into an internal combustion engine including the steps of:

deciding between using either a mass airflow sensor mode determination or a speed throttle mode of calculation as a function of engine RPM, throttle position, and mass airflow;

using a mass airflow sensor reading to determine air charge if the mass airflow mode has been chosen;

using a speed throttle look-up table to obtain air charge if the speed throttle mode has been chosen;

providing a first Q output from a first flip-flop having a set input of one when engine RPM is greater than a first RPM constant and having a clear input of one when RPM is less than a second RMP constant wherein the first RPM constant is the sum of an engine speed threshold necessary to exit the mass airflow mode plus an engine speed hysteresis to enter the speed throttle mode and the second RPM constant is the engine speed threshold necessary to exit the mass airflow mode;

providing a second Q output from a second flip-flop having a set input which is one when throttle position is greater than a first throttle position constant and having a clear input of one when throttle position is less than or equal to a second throttle position constant;

providing a third Q output from a third flip-flop having a set input which is one when mass airflow is greater than a first mass airflow constant and a clear input which is one when mass airflow is less than or equal to a second mass airflow constant;

coupling the three Q outputs of said first, second and third flip-flops as inputs of an AND logic; and

choosing speed throttle mode when the output of the AND logic is one and choosing mass airflow mode when the output of the AND logic is zero.

5,008,825

APPARATUS AND METHODS FOR AUTOMATICALLY MAINTAINING AIRCRAFT TRACK ANGLE

Arun A. Nadkarni, 12836 NE. 135th St., Kirkland, Wash. 98034, and Mithra M. K. V. Sankrithi, 4554 143rd Ave., SE., Bellevue, Wash. 98006

Filed May 1, 1989, Ser. No. 346,432

Int. Cl.[5] B60C *13/18*

U.S. Cl. 364—434 **47 Claims**

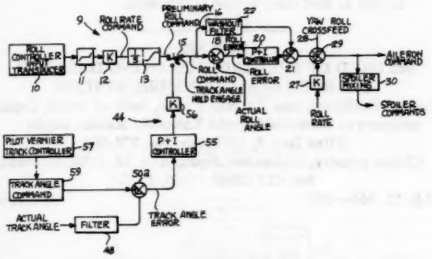
1. A control system for an aircraft, the control system comprising:

a. roll input means, (i) which are movable by a pilot of the aircraft, for generating a first command signal which is a function of an input made by the pilot to the roll input means so as to control a roll angle of the aircraft and (ii) which are movable in a manner that when the roll input means are in a neutral position there is no rolling moment

applied to the aircraft in response to the first command signal;

b. means for generating a second command signal, as a function of a selected navigation angle, for controlling a roll angle of the aircraft so as to maintain the selected navigation angle;

c. aircraft rolling means for generating a rolling moment on the aircraft; and



d. control means for causing the aircraft rolling means to respond to the first command signal from the roll input means, unless the roll input means is in the neutral position and the first command signal is within a calculated roll angle threshold value, in which case the aircraft rolling means is caused to respond to the second command signal so as to maintain the selected navigation angle.

5,008,826

METHOD AND APPARATUS FOR BALANCING A WHEEL OF A VEHICLE OR THE LIKE

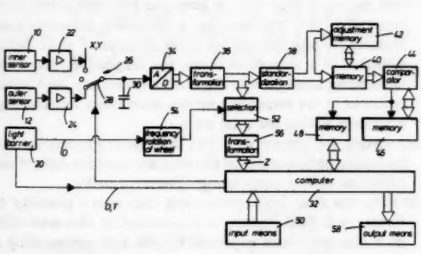
Alfons Staudinger, Munich, and Hermann Bux, Pöcking/Possenhofen, both of Fed. Rep. of Germany, assignors to A. Rohé GmbH, Schollkrippen, Fed. Rep. of Germany

Filed Feb. 2, 1989, Ser. No. 305,395

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1988, 3803325

Int. Cl.[5] G01M *1/22*

U.S. Cl. 364—463 **23 Claims**



10. Method for analyzing a wheel of a vehicle with a balancing machine comprising a shaft on which a wheel being mounted thereon is rotatable, electrical sensors being coupled to the shaft and issuing sensor output signals when forces are applied to the wheel, and a computer calculating and issuing unbalance values from the sensor output values in connection with specific wheel data being peculiar for the wheel to be balanced, wherein

the sensor output signals in case of a driven wheel are transformed into an unbalance frequency spectrum, and

the unbalance values are calculated from the unbalance frequency spectrum.

5,008,827

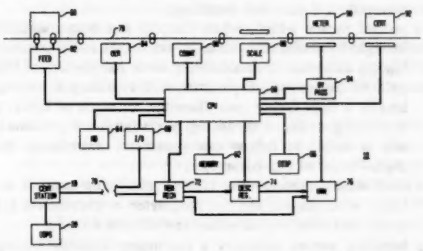
CENTRAL POSTAGE DATA COMMUNICATION NETWORK

Ronald P. Sansone, Weston; Karl H. Schumacher, Westport, both of Conn.; Raymond Keating, Purdys, N.Y.; Joseph W. Wall, Monroe, and Uday W. Joshi, Wilton, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 16, 1988, Ser. No. 285,891

Int. Cl.[5] G07B *17/00*

U.S. Cl. 364—464.02 **68 Claims**



1. A communication system for processing information for distribution, comprising: a central data station, a plurality of user stations, each of said user stations including a plurality of components forming a path for the proper distribution of said information, a communication link interconnecting said user stations with said central data station, said central data station including means for periodically interrogating via said link a user station for determining the operational status of each of said components, said user station including as one of its components a certification means for certifying that all said components are operational, and means for applying a visual indication of said certification to said information when distributed.

5,008,828

TOOL LATHE PROVIDED WITH IMPROVED CONTROL MEANS

Jean C. Pinard, Chevagnes; Bernard Jacquard, Yzeure, and André Besancon, Moulins, all of France, assignors to Societe Somab S.A., Moulins, France

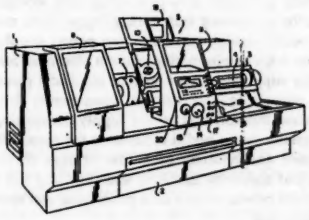
PCT No. PCT/FR88/00048, § 371 Date Oct. 3, 1988, § 102(e) Date Oct. 3, 1988, PCT Pub. No. WO88/05936, PCT Pub. Date Aug. 11, 1988

PCT Filed Jan. 28, 1988, Ser. No. 264,969

Claims priority, application France, Jan. 30, 1987, 87 01430

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—474.28 **9 Claims**



1. A center lathe type tool lathe, having a tool and a rotating chuck and capable of advancing the tool such that the advance of the tool is a function of the rotation (n) of the chuck, such lathe being capable of performing the operations of turning (displacement of the tool parallel to the axis of the rod), of facing (displacement of the tool perpendicularly to the axis of the rod), of linear threading interpolation (rapid displacement of the tool in proportion to the angle of rotation of the rod), of

taper joining (succession of a linear interpolation, of a partial circular interpolation and of a second linear interpolation), said lathe employing a means of calculation and digital control known and located in a computer/operator center, also called a processor or automaton, which center effects the displacement of the tool, it also being possible for said tool lathe to comprise a means for electronically machining a countour and copying said contour, which electronic contour and copying means comprises:

a first means for selecting at least one machining contour or tool path from a plurality of elementary paths comprising turning, facing, linear interpolation path and circular interpolation path and threading,

a second means which, when the tool has been manually brought by means of a pair of levers into an initial position (x_o, e_o) calls one or successively more parameters of this path of the group of parameters comprising a turning length, a final facing pass diameter, an angle of taper, a machining radius, a threading pitch (advance per turn), and in order to follow one parameter, introduces the digital value of this parameter,

a third means, whereby the type of machining contour selected is displayed, and the parameter or parameters are called and their digital values are introduced, and,

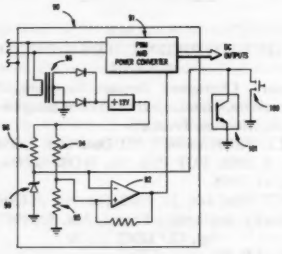
a handling means, whereby a machining contour having been selected and the tool being in the starting position, triggers the displacement of the tool on its path or, alternatively stops the tool at any point of its path.

5,008,829

PERSONAL COMPUTER POWER SUPPLY

Roger L. Cox, Plantation; Michael J. DeLoye, Boynton Beach, and Robert L. Myers, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1990, Ser. No. 536,751
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—480 **10 Claims**



8. A microcomputer comprising:

electrically powered data processing and storage components for processing and storing digital data, and

a pulse width modulation switching power supply for connection with an alternating current electrical main supply and for supplying direct current electrical power to said data processing and storage components for enabling operation thereof, said power supply comprising:

a controllable pulse width modulator for responding to the presence and absence of a low voltage direct current electrical signal by enabling and disabling the supply of electrical power to said data processing and storage components, and

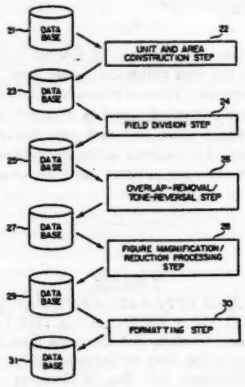
a signal generator circuit operatively connected with said controllable component and with an alternating current electrical main supply for controllably deriving from the main supply a low voltage direct current signal for delivery to said controllable component, said signal generator circuit comprising a comparator, a first signal circuit for supplying to the comparator a low voltage direct current reference signal, and a controllable second signal circuit for controllably supplying to the comparator a low voltage enable/disable signal varying between a first voltage and a second, higher voltage, said comparator when supplied with said reference signal and said enable/disable signal having said first voltage delivering to said controllable component said first mentioned signal, whereby a user of the microcomputer may control energization of the electrically powered data processing and storage components by controlling the application of said low voltage direct current signal from said signal generator circuit to said controllable component.

5,008,830

METHOD OF PREPARING DRAWING DATA FOR CHARGED BEAM EXPOSURE SYSTEM

Koichi Moriizumi, and Takeshi Fujino, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Dec. 1, 1988, Ser. No. 278,452
Claims priority, application Japan, Aug. 10, 1988, 63-198032
Int. Cl.[5] G06F *15/60, 15/20*
U.S. Cl. 364—490 **8 Claims**



1. A method of preparing drawing data for a charged beam exposure system comprising:

constructing from pattern data describing features representing elements in a semiconductor integrated circuit, a pattern having a total area, at least one reiterative unit, each reiterative unit representing a repeating sub-pattern of features, a plurality of identical reiterative units being disposed in a respective array, the respective reiterative units being contiguously disposed without any gaps therebetween in the respective arrays, each array representing a subarea within the total area;

converting the pattern data into first figure processing data including pattern data for the total area and for each of the sub-areas and corresponding reiterative units;

dividing the first figure processing data into a plurality of fields, each field chosen to accommodate characteristics of a charged beam exposure system and representing a portion of the total area, some of the fields representing areas including part or all of an array, each field including any part of an array including only a whole number of reiterative units of the respective array, to form second figure processing data;

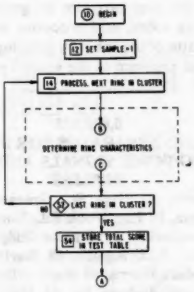
performing figure modification processing of the second figure processing data for each field, separately processing second figure processing data representing areas in each field, if any, not including any reiterative units and representing areas in each field, if any, including reiterative units to form third figure processing data; and

converting the third figure processing data into drawing data for the charged beam exposure system.

5,008,831
METHOD FOR PRODUCING HIGH QUALITY CHEMICAL STRUCTURE DIAGRAMS

Alfred P. Feldman, Columbia, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jan. 12, 1989, Ser. No. 296,019
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—496 **8 Claims**



1. A computer operated method for transforming a first chemical structure's appearance, comprising

storing within a computer information representative of a series of parameters applicable to chemical structures, and values corresponding to the parameters;

entering a first chemical structure into the computer as a first array;

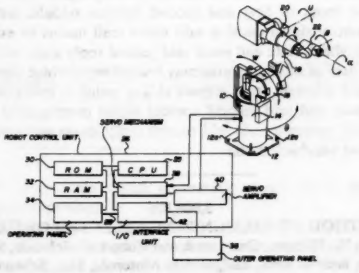
establishing which of the stored parameters are present in the first chemical structure and operating on the values present therein to establish a first score; and

printing the structure corresponding to the first score.

5,008,832
INDUSTRIAL ROBOT ABLE TO SET MOTION CONDITIONS DEPENDING ON POSTURE OF INSTALLATION THEREOF

Nobutoshi Torii, Hachioji; Hitoshi Mizuno, and Katsuyuki Muraki, both of Yamanashi, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP89/00016, § 371 Date Sep. 5, 1989, § 102(e) Date Sep. 5, 1989, PCT Pub. No. WO89/06180, PCT Pub. Date Jul. 13, 1989
PCT Filed Jan. 9, 1989, Ser. No. 415,209
Claims priority, application Japan, Jan. 9, 1988, 63-1810
Int. Cl.[5] G05B *19/18*; B25J *9/16, 13/00*
U.S. Cl. 364—513 **12 Claims**



1. An industrial robot able to automatically set operating conditions in accordance with an installation position of the industrial robot comprising:

a robot unit provided with at least movable elements each movable element movable about an articulatory axis, and a base element to be fixedly installed at a site at which the industrial robot is to be used;

a robot control unit provided with a first data storage unit for storing basic control data for robot operation, a second data storage unit for storing control data externally input, and a control function unit for controlling motion of said movable elements based on said control data stored in said first and second data storage units;

a predetermined storage region provided in said first data storage unit for storing (a) data about various installation positions of said robot unit with respect to a predetermined reference installation position of said robot unit, and (b) data about operating conditions for various installation positions of said robot unit;

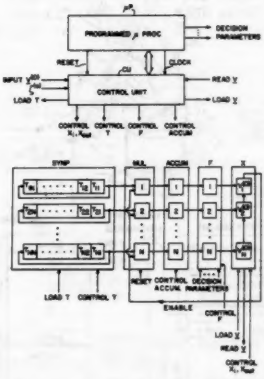
an input unit for providing said control function unit of said robot control unit with data indicating an installation position of said robot unit during use of said robot unit; and

a setting unit for reading out the operation conditions, corresponding to the data indicating the installation position of the robot unit provided by said input unit, from said predetermined storage region of said first data storage unit and for automatically setting externally input operating conditions in said second data storage unit of said robot control unit.

5,008,833
PARALLEL OPTOELECTRONIC NEURAL NETWORK PROCESSORS

Aharon J. Agranat; Charles F. Neugebauer, both of Pasadena, and Amnon Yariv, San Marino, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 273,099, Nov. 18, 1988, abandoned, which is a continuation-in-part of Ser. No. 34,593, Apr. 6, 1987, abandoned. This application Mar. 19, 1990, Ser. No. 495,781
Int. Cl.[5] G06F *15/18*
U.S. Cl. 364—513 **10 Claims**



1. An optoelectronic neural network of N neurons connected to each other by synapses, in which the state of said neurons is given by a vector $\underline{V} = V_1, V_2, \ldots V_j \ldots V_N$, where V_j is the state of the j'th neuron, and the strength of the synaptic interaction between the neurons is defined by a matrix T, where T_{ij} is a value representing the strength of the interaction between neurons specified in the i'th row and j'th column of said matrix, said neural network being implemented by an electronic system comprising

means for storing said interaction matrix T, comprising a spatial light modulator for producing a pattern of light intensity corresponding to spatial distribution of said val-

ues T_{ij} of said matrix T, and an array of photodetectors spatially distributed to separately receive said values T_{ij},

means for storing said state vector $\underline{V}$, said vector storing means having a column of N registers, one for each vector element V_j constituting a neuron,

means for multiplying said matrix T with said state vector $\underline{V}$, and

means for summing the products of said multiplication for each row of said matrix to produce a current

$$I_i = \sum_j T_{ij} V_j,$$

where I_i is the current for the i'th row of said matrix corresponding to the j'th neuron of said state vector,

means responsive to said current sums I_i, for producing new values V_j for said state vector in accordance with predetermined decision parameters, and

means for storing said new values V_i of said state vector in said column of N registers.

5,008,834

ROBOT CONTROL APPARATUS

Tohru Mizuno, Tama, and Takayuki Ito, Minamitsuru, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

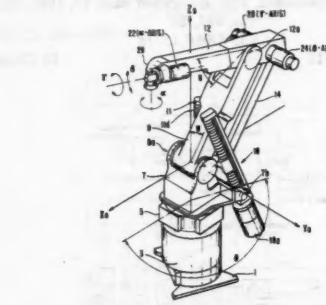
PCT No. PCT/JP88/00362, § 371 Date Oct. 28, 1988, § 102(e) Date Oct. 28, 1988, PCT Pub. No. WO88/07916, PCT Pub. Date Oct. 20, 1988

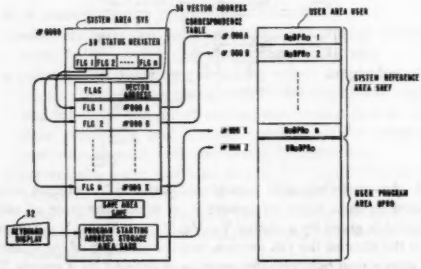
PCT Filed Apr. 9, 1988, Ser. No. 265,673

Claims priority, application Japan, Apr. 10, 1987, 62-088331

Int. Cl.[5] G05B *19/00*; B25J *9/16*

U.S. Cl. 364—513 **6 Claims**





1. A robot control system for controlling the motion of a robot using a system program having first and second parts and a user program, said system comprising:

storage means for storing the system program and the user program, said storage means having a system area and a user area, the first part of the system program being stored in the system area and providing a plurality of flags indicating operating status of the robot, the second part of the system program being stored in the user area and including monitor programs corresponding to the flags, the system area of said storage means includes at least

register means for storing the flags; and

a correspondence table for providing the predetermined location of the monitor programs within the user area based upon the flags; and

processor means for continuously monitoring the operating status of the robot based on the system program and for processing the user program to generate motion commands for the robot, said processor means monitors the operating status of the robot by jumping from the first part of the system program to the second part.

5,008,835

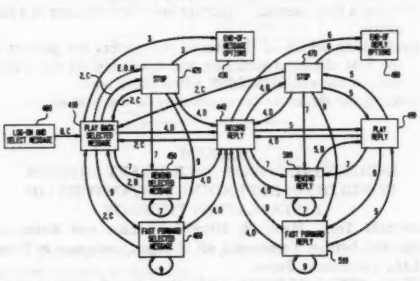
METHOD AND APPARATUS FOR STORING AND FORWARDING VOICE SIGNALS AND GENERATING REPLIES

Emil F. Jachmann, 13 High St., Greenwich, Conn. 06830; Jeremy Saltzman, 24 Highbrook Rd., Norwalk, Conn. 06851; David B. Chamberlin, 11 Hunter Ridge, Monroe, Conn. 06468; Nicholas A. D'Agosto, 68 Sterling Rd., Trumbull, Conn. 06611; Mark Harris, 64 Roger White Dr., New Haven, Conn. 06511, and Jy-hong Su, 14 Hunters La., Norwalk, Conn. 06850

Filed Dec. 28, 1987, Ser. No. 138,417

Int. Cl.[5] G10L *5/00*; G06F *13/00*

U.S. Cl. 364—513.5 **19 Claims**



1. Apparatus for storing and forwarding voice signals, comprising:

(a) voice mail means for storage and retrieval of said voice signals, said voice mail means having a playback state for playback of selected voice signals and a record state for recording reply voice signals;

(b) station means for input and output of said voice signals;

(c) said station means further comprising signal input means for input of first and second control signals, said first control signal causing said voice mail means to exit said playback state and enter said record reply state, whereby a user of said apparatus may record reply voice signals to said selected voice signals at any point in said playback state, and said second control signal causing said voice mail means to exit said record reply mode and return to said playback mode.

5,008,836

METHOD OF RECOGNIZING SELECTED OBJECTS

Robert W. Withers, Overgaard, and Robert H. Johnson, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 20, 1989, Ser. No. 382,359

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—516 **4 Claims**

1. A method of recognizig, during a fly-over, selected ob-

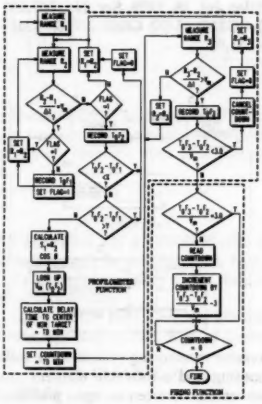
jects having a known height and width, comprising the steps of:

periodically measuring the range to the ground at a predetermined angle with the surface of the ground;

comparing adjacent measurements to determine changes in range;

measuring the rate of change of the range;

measuring the time from a first change in range, after an object is indicated, to a second subsequent change in range to determine the height of the object;



comparing the measured height to the known height to determine if the height of the object is an acceptable height for the selected object;

measuring the time from the second subsequent change in range to a third subsequent change in range to determine the width of the object; and

comparing the measured width of the object of the known width to determine if the object is the selected object.

5,008,837

GRAY SCALE GENERATING CIRCUIT FOR THERMAL PRINTER

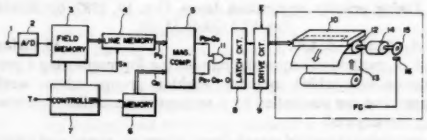
Yasushi Hirumi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 15, 1989, Ser. No. 451,148

Claims priority, application Japan, Jan. 10, 1989, 1-001983

Int. Cl.[5] G06K *15/00*

U.S. Cl. 364—519 **15 Claims**



1. A gray scale signal generating circuit for a thermal printer, comprising:

memory means for storing image data to be printed;

means for generating PWM driving pulses of said image data stored in said memory means;

means for generating a zero level driving pulse; and

means for supplying said PWM driving pulses and said zero level driving pulse to a thermal head drive circuit so that a print image is obtained even when said image data is at a zero level.

5,008,838

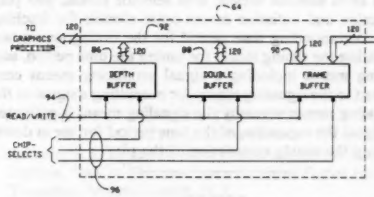
METHOD FOR SIMULTANEOUS INITIALIZATION OF A DOUBLE BUFFER AND A FRAME BUFFER

Brian M. Kelleher, and Zahid Hussain, both of Palo Alto, Calif., assignors to Digital Corporation, Maynard, Mass.

Filed Nov. 17, 1989, Ser. No. 438,649

Int. Cl.[5] G06F *3/14*

U.S. Cl. 364—522 **10 Claims**



1. In a graphics image rendering system including a graphics processor, a graphics display screen, double buffer means for storing pixel color information and depth buffer means for storing pixel depth information, a method for initializing the depth buffer means and the double buffer means comprising the steps of:

writing to each pixel storage element of the double buffer means a binary value representing a background color to appear on the graphics display screen; and

writing to each pixel storage element of the depth buffer means the binary value representing the background color to appear on the graphics display screen.

5,008,839

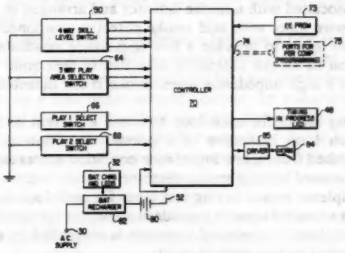
SPORTS TRAINING APPARATUS

John D. Goodwin; Samuel D. Goodwin, both of 1605 Slattery Bldg., Shreveport, La. 71101; Wilford House, 506 Pineacres Dr., Shreveport, La. 71107, and James Farrar, 727 Unadella, Shreveport, La. 71106

Filed Feb. 16, 1989, Ser. No. 312,079

Int. Cl.[5] G06F *15/44;* **A63B** *69/00*

U.S. Cl. 364—550 **15 Claims**



1. A sports training apparatus for injecting actual game timing into team practice comprising:

an on/off means for powering on the apparatus; a skill level selector means for selecting a skill level from a group consisting of pre-high school, high school, college, and professional skill levels; an area selector means for selecting an area from a group consisting of infield, outfield and catcher areas for corresponding play practice; and a plurality of play selection and initiation means for producing a play selection and play initiation signal;

a signaling means for producing a signal indicating a time period for completing the selected play has expired; and

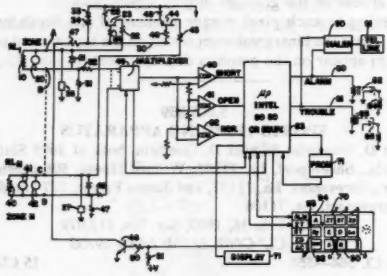
a control means having a memory means for storing information including a plurality of skill levels and time periods for each of the skill levels, a timing means connected to

the memory means for receiving time periods and outputting signals indicative of the expiration of the time periods, a plurality of sense circuits for connecting the controller to: the on/off means for sensing power on, the skill level selector means for sensing the skill level selection, the area selector means for sensing the area selection, and the plurality of play selection and initiation means for sensing a play selection; an information fetching means connected to the memory means and responsive to the outputs of the skill level selector means, area selector means, and play selection and initiation means sense circuits for fetching the corresponding time period for the timing means and initiating the timing means for timing the time period, said timing means including a signal producing means connected to the signaling means for outputting a signal to the signaling means whereby the signaling means is activated to signal the expiration of the time period for use in determining the timely completion of the play.

5,008,840
MULTI-ZONE MICROPROCESSOR FIRE CONTROL APPARATUS

Alfred V. DePierro, Woodbury, N.Y., assignor to Napco Security Systems, Inc., Amityville, N.Y.

Filed May 27, 1988, Ser. No. 199,772
Int. Cl.[5] G08B *17/00*
U.S. Cl. 364—550 **20 Claims**



1. A fire control system including a plurality of zones, each zone associated with a smoke detector and arranged in at least a two wire loop, with said smoke detector positioned across said two wires to provide a low impedance condition upon detection of smoke indicative of a fire in that zone and to provide a high impedance when smoke is not detected, comprising

biasing means for each loop to allow a current to flow in each loop indicative of a normal condition as distinguished from a low impedance condition across said loop as caused by said smoke detector;

multiplexer means having one input for each loop and having a control input to provide at an ouptut the condition of each loop in a selected sequence as controlled by a signal applied to said control input;

a microprocessor means having output means coupled to said multiplexer control input for controlling the same;

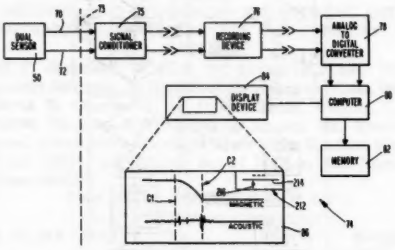
comparator means having inputs coupled to said multiplexer output and outputs coupled to said microprocessor means to enable said microprocessor to store the condition of each loop indicative of each zone and as to whether said loop is in a normal condition or a low impedance condition;

a keyboard coupled to said microprocessor means for causing said microprocessor to recognize selected key depressions indicative of a one man test mode, whereby when said mode is recognized said microprocessor means responds to low impedance conditions of selected loops as being intentionally implemented during a predetermined period to notify a user of said test mode in order to verify an intentional implemented low impedance condition of said loop as caused by an associated smoke detector with said microprocessor coupled to said biasing means to interrupt said current flow in said loop for a given period to allow said intentional condition to clear back to normal indicative of the completion of said one man test mode.

5,008,841
NON-INVASIVE SYSTEM AND METHOD FOR INSPECTION OF VALVES

John W. McElroy, Newtown Square, Pa., assignor to Liberty Technology Center, Inc., Conshohocken, Pa.

Filed Jul. 28, 1989, Ser. No. 387,223
Int. Cl.[5] G21C *17/00*; G08B *21/00*; G01D *7/00*
U.S. Cl. 364—551.01 **22 Claims**



1. A non-invasive monitoring system for a valve of the type including a housing and a movable element mounted in the housing for movement between an open position and a closed position and intermediate positions between the open and closed positions comprising:

(a) first means for both detecting acoustic energy produced by the valve during a monitoring interval and generating data representative of the detected acoustic energy;

(b) second means for both detecting signals indicative of the position of the movable element during the monitoring interval and generating data representative of the detected signals; and

(c) third means coupled to the first and second means for simultaneously receiving the data generated by the first and second means and providing data from which a condition of the valve can be determined by a user.

5,008,842
METHOD OF SEQUENTIAL MONITORING AND APPARATUS FOR PRACTICING THE SAME

Tetsuji Nagai; Katura Torii, and Yoshio Ohno, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1988, Ser. No. 260,012
Claims priority, application Japan, Oct. 19, 1987, 62-263236
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—551.01 **15 Claims**

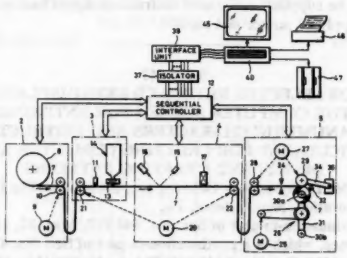
1. A method of sequential monitoring for monitoring a production line which includes working groups whose work operations are controlled by a sequential controller, comprising the steps of:

receiving electrical signals from detectors, one of said detectors being provided in each of a plurality of working groups distributed along a said production line, each of said working groups performing a different plurality of work operations;

storing first data generated from said received signals and representative of the order of outputting and the time intervals of said electrical signals;

producing a sequence pattern based on said stored first data and representative of a sequence of work operations performed within at least one of said working groups as well

as representative of a time interval within which each of said work operations has been performed a plurality of times; and



monitoring the working conditions of said plurality of working groups by comparing said sequence pattern with said electrical signals received after producing said sequence pattern.

5,008,843

SENSOR HAVING AN ANSWERBACK DEVICE

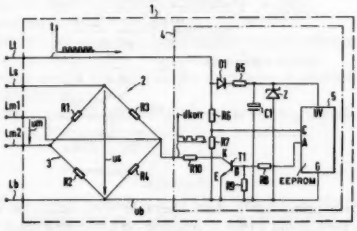
Wolf-Dieter Poelsler, and Bernd Baumann, both of Weissach, Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Dec. 23, 1988, Ser. No. 289,325

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1987, 3743846

Int. Cl.[5] G01L *25/00*

U.S. Cl. 364—571.02 **9 Claims**



2. An arrangement for the detection and evaluation of a physical magnitude, comprising:

a measuring sensor device having:

a physical-electrical transducer having an output and a measuring bridge containing only passive devices, said transducer converting physical magnitudes into equivalent analog electrical magnitudes; and

an answerback device coupled to the transducer and having a non-volatile memory which stores correction data of the measuring sensor device, said answerback device having an output at which is provided a data bit flow serially read out of the non-volatile memory, the answerback device also having a controllable switching element connected in parallel to a branch of the measuring bridge, said switching element in a first condition being high-ohmic with respect to said branch, and being controlled by the answerback device into a second condition to tune the measuring bridge so as to transmit correction data, said controllable switching element being switched on and off by the answerback device according to the data bit flow serially read out of said memory device; and

an evaluation circuit structurally separate from the measuring sensor device and connected to the output of the transducer by electrical lines over which measured values of the measuring sensor device are transmitted, said evaluation circuit detecting changes in said output of the measuring bridge to reconstruct said correction data, and said evaluation circuit using the correction data to correct the electrical magnitudes output by the transducer.

5,008,844

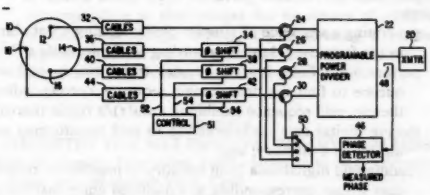
COLLISION AVOIDANCE TRANSMIT SYSTEM WITH AUTOCALIBRATION

Constantinos S. Kyriakos, Boca Raton, and Henri Baran, Coral Springs, both of Fla., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jan. 10, 1990, Ser. No. 463,181

Int. Cl.[5] G01S *7/40, 3/02*

U.S. Cl. 364—571.05 **12 Claims**



1. A calibration method for a transmitter having a first, a second, a third and a fourth element circumferentially positioned with a 90 degree spacing in an antenna array such that the first and the third elements are oppositively positioned and the second and the fourth elements are oppositively positioned, the first, the second, the third and the fourth element being selectively connectable through a first, a second, a third and a fourth channel, respectively, of components to a transmitter or to a first input of a phase detector, the transmitter being connected to the second input of the phase detector, comprising the steps of:

determining the phase difference between a first and a third channel by transmitting a signal between the first element and a first element adjacent the first and third elements to obtain a first phase detector output, by transmitting the signal between the third element and the first element adjacent the first and third elements to obtain a second phase detector output and by inserting a first phase shift in the third channel such that the first and second phase detector outputs are equal;

determining the phase difference between a second and fourth channel by transmitting between the second element and a first element adjacent the second and fourth elements to obtain a third phase detector output, by transmitting between the fourth element and the element adjacent the second and fourth elements to obtain a fourth phase detector output and by inserting a second phase shift in the fourth channel such that the third and fourth phase detector outputs are equal;

transmitting between the first and third elements with the first phase shift inserted into the third channel to obtain a fifth phase detector output; and

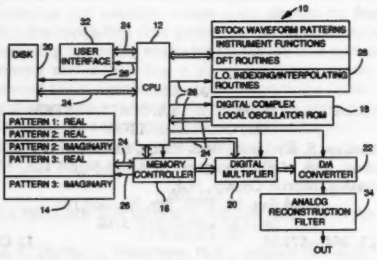
transmitting between the second and fourth elements with the second phase shift inserted into the fourth channel to obtain a sixth phase detector output and inserting a third phase shift in the second channel such that the fifth and sixth phase detector outputs are equal.

5,008,845

METHOD AND APPARATUS FOR GENERATING A CHIRP SIGNAL

James L. Adcock, Seattle, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 27, 1989, Ser. No. 344,777
Int. Cl.[5] G01V 1/36
U.S. Cl. 364—576 14 Claims



1. A method for generating a chirp signal comprising the steps:

generating a sequence of samples characterizing a flat chirp in the frequency domain according to the formula e^{jkw^2};

performing a finite inverse Fourier transform on said sequence to find the time domain sequence corresponding thereto, said sequence exhibiting a sin(x)/x ripple therein;

storing digital data corresponding to said transformed sequence in a memory; and

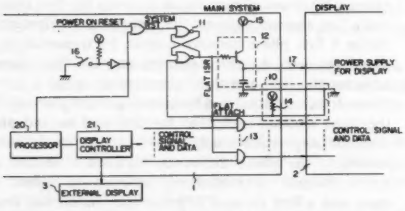
reading said digital data from memory to produce an output data stream corresponding to a digitized chirp that is flat in the frequency domain.

5,008,846

POWER AND SIGNAL SUPPLY CONTROL DEVICE

Akifumi Inoue, Fussa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 27, 1989, Ser. No. 441,757
Claims priority, application Japan, Nov. 30, 1988, 63-302469
Int. Cl.[5] G06F 1/00
U.S. Cl. 364—707 18 Claims



1. A device for controlling supply of power and signals from a main system comprising:

a display which is configured to be connected to and disconnected from said main system;

detecting means for detecting whether said display is connected to said main system or not;

supply instructing means responsive to said detecting means, and a reset signal applied thereto, for automatically generating an instruction signal for instructing the supply of power and signals to said display responsive to said reset signal and until said detecting means detects that said display is not connected to said system;

power control means responsive to the instruction signal for controlling the supply of power to said display to be supplied while said instruction signal instructs said supply of power and signals; and

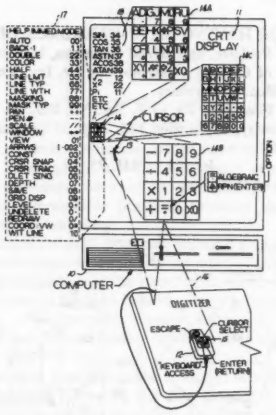
signal controlling means, responsive to the instruction signal, for controlling the supply of the signals to said display to be supplied while said instruction signal instructs said supply of power and signals.

5,008,847

CURSOR SELECTED KEYBOARD KEYS DISPLAYED ON THE COMPUTER SCREEN FOR ENTERING ALPHANUMERIC CHARACTERS AND INSTRUCTIONS, PARTICULARLY FOR CREATING COMPUTER AIDED DESIGN AND DRAFTING PATTERNS

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Continuation-in-part of Ser. No. 844,872, Mar. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 459,998, Jan. 21, 1983, Pat. No. 4,547,860. This application Jun. 10, 1987, Ser. No. 60,225
Int. Cl.[5] G06F 3/023
U.S. Cl. 364—709.16 4 Claims



1. In a computer system operable with selection control means for placing a cursor position on a visible display screen for displaying graphic patterns,

means for displaying on a portion of said screen a virtual keyborad array presenting a plurality of virtual keys at respective keyboard locaitons having thereat symbols identifying both a set of computer reproducible patterns and a set of computer command instructions to be selected by moving the cursor to identify the respective virtual keys,

manually positionable keystroking means responsive to the cursor position on said display screen for selecting a desired one of the virtual keys on said screen and initiating a computer command operation corresponding to a symbol identified at the selected virtual key loation displayed on the screen.

means for operating the computer in a mode requiring two keystrokes per entry thereby to reduce the number of virtual keys and corresponding display space required on the computer screen for selection of said sets of patterns and commands, and

means for displaying one set of virual key configurations on the screen for the first keystroke showing the key function and activating the keys to operate to perform that function, and for replacing the key configuration with another set of virtual keys with displayed key functions on the screen for the second keystroke in response to the first keystroke.

5,008,848

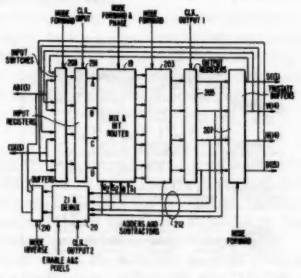
CIRCUIT FOR PERFORMING S-TRANSFORM

Samuel O. Akiwumi-Assani, Beacon, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed May 30, 1989, Ser. No. 358,982

Int. Cl.[5] G06F *15/332*

U.S. Cl. 364—725 **10 Claims**



1. Apparatus for calculating a data transformation which includes at least two successive arithmetic operations, the apparatus comprising:

(a) a first set of terminals for receiving a plurality of input data signals in parallel;

(b) a single stage comprising a plurality of means, disposed in parallel, for performing arithmetic operations;

(c) means for feeding results of a first set of arithmetic operations back to said single stage so that said single stage subsequently performs a second set of arithmetic operations on said results; and

(d) a second set of terminals for supplying a plurality of transformed data signals wherein

(e) the data transformation is the S-transform;

(f) the first set of terminals is for receiving signals representing four data points arranged in a 2×2 array;

(g) each means for performing comprises a respective adder/subtracter; and

(h) the second set of terminals is for supplying signals representing four coefficients of the S-transform.

5,008,849

APPARATUS ADDING VALUES REPRESENTED AS RESIDUES IN MODULO ARITHMETIC

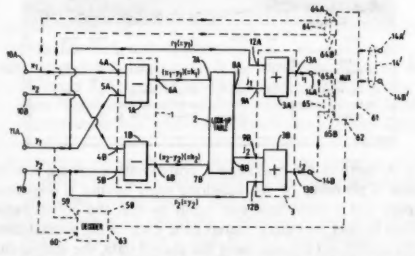
Ian A. Burgess, Horley; Andrew M. Dennis, Redhill, and Christopher B. Marshall, Lindfield, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 1, 1989, Ser. No. 345,391

Claims priority, application United Kingdom, Apr. 29, 1988, 8810167

Int. Cl.[5] G06F *7/72*

U.S. Cl. 364—746 **5 Claims**



4. Apparatus for generating a residue representation modulo $p-1$ of the power index i to which a generator g has to be raised to give the value $X+A\cdot Y$ is modulo p arithmetic in response to the application to said apparatus of input residue representations modulo $p-1$ of x, where $g^x=X$, and y, where $g^y=Y$, wherein the residue representation of i, x, and y, each consist of a respective plurality of n residue components modulo a uniform set of respective intergers which are mutually prime and the product of which is equal to $p+1$, the apparatus comprising:

(a) for each said integer, a separate input subtractor for receiving the input residue representations with respect to that integer,

(b) a look-up table fed by the outputs of all subtractors for generating, upon reception of the subtraction results with respect to each pair or representations of x and y, a plurality of n residue components, each modulo a respective said integer and each at a respective look-up table output and together constituting a residue representation modulo $p-1$ of the power index j to which g has to be raised to give the value g^k+A, in response to the application to an input of the look-up table of a residue representation modulo $p-1$ of any member of a set of values of k, and

(c) for each said integer, a separate adder for on a first adder input receiving the residue representation with respect to that integer of one of the input residue representations and a second adder input receiving the look-up table output corresponding to that integer for by means of addition modulo that integer collectively generating a residue representation of the sum of values received modulo $p-1$, wherein allowable values for A are $+1$, -1.

5,008,850

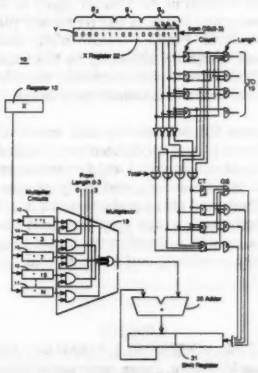
CIRCUITRY FOR MULTIPLYING BINARY NUMBERS

Eric H. Jensen, Livermore, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed May 25, 1990, Ser. No. 528,937

Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—760 **40 Claims**



1. A circuit for multiplying a first and a second binary number, said first and second binary numbers comprising of one or more ordered groups of ordered bits, each of said bits having a value of one or zero, bits having a value of one being located contiguously in the lower order bits of said groups, and bits having a value of zero being located in the remaining higher order bits of said groups, said circuit comprising:

(a) a first and a second register means for holding said first and second binary numbers;

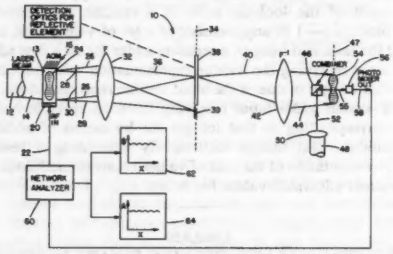
(b) generating means coupled to said first and second register means for generating a partial product for each of said ordered groups of said first binary number, each of said partial products being equal to said second binary number multiplied by one of said ordered groups; and

(c) accumulating means coupled to said generating means for accumulating each of said generated partial products, the product of the first and second binary numbers being equal to the accumulation of the partial products.

5,008,851
OPTICAL HETERODYNING SYSTEM AND METHOD FOR RAPID OPTICAL PHASE AND AMPLITUDE MEASUREMENTS

Robert W. Brandstetter, Levittown; Benjamin J. Pernick, Forest Hills; Nils J. Fonneland, Lake Ronkonkoma, and Stephen J. Caputi, Centerport, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 27, 1989, Ser. No. 328,637
Int. Cl.[5] G06G *7/00*; G02F *1/11*; G01B *9/02*
U.S. Cl. 364—807 **16 Claims**



1. A system for obtaining optical phase and amplitude measurements comprising:

means for modulating a coherent light beam with a multifrequency electrical input signal to form an image;

means for Fourier transforming said image to produce a scanning coherent light beam in the Fourier plane, said scanning coherent light beam interacts with an optical component located in the Fourier plane to form a modulated transformed image in the frequency plane;

means for inverse Fourier transforming said modulated transformed image for detecting an electrical output signal therefrom from which amplitude and phase measurements of said modulated transformed image is determined; and

analyzer means for determining said amplitude and phase measurements of said modulated transformed image from said electrical output signal and for storing said amplitude and phase measurements, said analyzer means compares said amplitude and phase measurements of said modulated transformed image to the amplitude and phase measurements of a reference transformed image to quantitatively measure the amplitude and phase of said optical component.

5,008,852
PARALLEL ACCESSIBLE MEMORY DEVICE

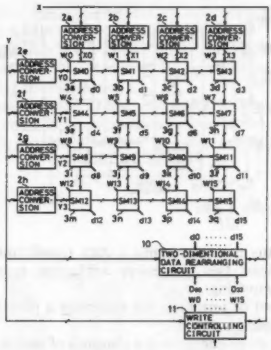
Hiroshi Mizoguchi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1988, Ser. No. 175,484
Claims priority, application Japan, Mar. 31, 1987, 62-076489
Int. Cl.[5] G06F *12/00, 12/06*; G11C *8/00*
U.S. Cl. 364—900 **8 Claims**

1. A parallel accessible M-dimensional memory device, comprising:

N_i column submemories for i-th dimension (i=1, . . . , M) where N_i is a positive integer, each one of the N_i column submemories having $1/N_i \times N_2 \times \ldots \times N_n$ capacity of a total memory capacity of the device, each one of the N_i column submemories having addresses addressed by an integer submemory address S_j=0, 1, 2, . . . (j−0, 1, . . . , N_i−1) labeling rows within each column submemory, the addresses of the N_i column submemories being also addressed by an M-dimensional integer input address X_i=0, 1, 2, . . . (i=1, . . . , M) labeling the addresses of all of the N_i column submemories collectively, and where (j+1)-th one of the N_i column submemories stores (j+1+nN_i)-th data for i-th dimension, (n=0, 1, . . .):

address converting means for obtaining N_i submemory addresses S_j for N_i data to be parallel accessed, for the M-dimensional input addresses X_i supplied externally; and

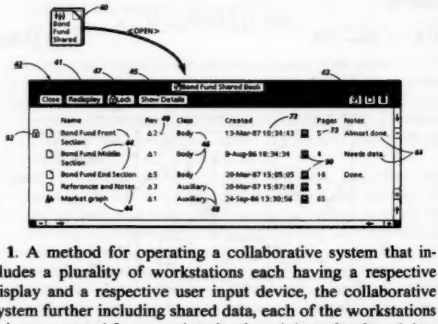


data rearranging means for rearranging the N_i data read out from the N_i submemory addresses S_j of the N_i submemories obtained by the address converting means, in accordance with the M-dimensional input address X_i, such that the N_i data are arranged in an order labeled by the M-dimensional input address X_i.

5,008,853
REPRESENTATION OF COLLABORATIVE MULTI-USER ACTIVITIES RELATIVE TO SHARED STRUCTURED DATA OBJECTS IN A NETWORKED WORKSTATION ENVIRONMENT

Sara A. Bly, Mountain View; A. Brady Farrand, Berkeley; Jeffery D. Hodges, Newark; Michael D. Kupfer, Mountain View; Brian T. Lewis, Palo Alto; William J. Maybury, Torrance; Michael L. Tallan, Mountain View, and Stephen B. Tom, San Francisco, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 2, 1987, Ser. No. 127,993
Int. Cl.[5] G06F *3/14*
U.S. Cl. 364—900 **20 Claims**



1. A method for operating a collaborative system that includes a plurality of workstations each having a respective display and a respective user input device, the collaborative system further including shared data, each of the workstations being connected for accessing the shared data, the shared data including a set of parts, the method comprising the steps of:

presenting on the respective display of a first one of the workstations a local representation of the shared data; the

local representation of the shared data including, for each of the parts of the shared data, a respective small-scale representation occupying a small part of the first workstation's respective display;

presenting on the respective display of a second one of the workstations a full-scale representation of a first one of the parts of the shared data, the full-scale representation occupying a substantial part of the second workstation's respective display; and

after receiving from the second workstation's respective user input device a signal requesting an operation affecting the first part of the shared data, including in the first part's respective small-scale representation an indication of the operation affecting the first part.

5,008,854

POCKET SIZE DATA STORAGE APPARATUS WITH TABLET DEVICE FOR INPUTTING IMAGE DATA

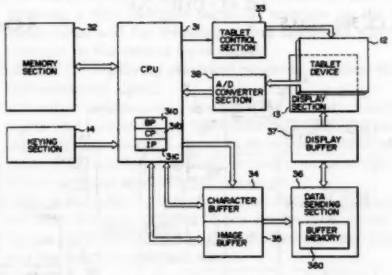
Junichi Maeda; Tsuguo Yanai; Kazuto Yamamoto; Yuji Kuriyama, and Haruo Yamamoto, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 235,709, Aug. 19, 1988, abandoned, which is a continuation of Ser. No. 946,712, Dec. 24, 1986, abandoned. This application Oct. 16, 1989, Ser. No. 423,604

Claims priority, application Japan, Jun. 19, 1986, 61-93502[U]

Int. Cl.[5] G06F *3/02*

U.S. Cl. 364—900 **18 Claims**



1. A data storage apparatus, comprising:

image-data-input means for inputting image data;

character-data-input means having a plurality of character keys, for inputting character data;

data-file-producing means for producing a data file one section of which includes image data input from said image-data-input means and another section of which includes character data input from said character-data-input means;

memory means for storing a plurality of the data files produced by said data-file-producing means, wherein for each data file a first area of the memory means stores the one section of the data file, and a second area of the memory means stores the other section of the data file;

display means for displaying image data and character data stored in said memory means;

character data detecting means for retrieving character data included in the other section of each of the plurality of data files stored in said memory means, and for supplying a plurality of said retrieved character data to said display means;

designating means for selecting one of the plurality of the retrieved character data displayed on said display means belonging to a particular data file; and

memory-data-input means for outputting image data to said display means from a first area of said memory means which stores image data from one section of the particular data file which includes in its other section the retrieved character data selected by said designating means.

5,008,855

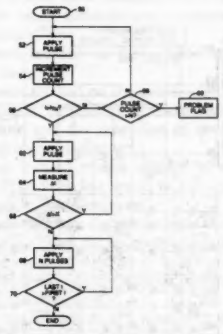
METHOD OF PROGRAMMING ANTI-FUSE ELEMENT

Abelshafy A. Eltoukhy, San Jose, and David H. Gluss, Woodside, both of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Filed Jul. 18, 1989, Ser. No. 381,630

Int. Cl.[5] G11C *7/00, 11/21*

U.S. Cl. 365—96 **1 Claim**



1. A method of programming an anti-fuse including the steps of:

(1) Applying voltage pulses to said anti-fuse, said voltage pulses including a first portion having a first amplitude less than the voltage necessary to program said anti-fuse, and having a second portion having a second amplitude equal to the voltage necessary to program said anti-fuse,

(2) Measuring the current drawn by said anti-fuse from said second portion of said voltage pulse,

(3) Determining whether said current drawn by said anti-fuse exceeds a predetermined threshold,

(4) Repeating steps 1 through 3 if said current does exceed predetermined threshold,

(5) Applying a series of pulses to said anti-fuse if said current does exceed said predetermined threshold,

(6) Measuring the difference in current drawn by said anti-fuse between successive ones of the voltage pulses applied in step 5,

(7) Repeating step 5 if said difference in current exceeds a predetermined threshold,

(8) Applying a fixed number of pulses if said difference does not exceed said predetermined threshold,

(9) Measuring the current drawn by said anti-fuse at the first and last ones of said fixed number of pulses,

(10) Repeating step 9 if the difference between the current drawn during said first and last ones of said fixed number of rules exceeds a predetermined threshold.

5,008,856

ELECTRICALLY PROGRAMMABLE NONVOLATILE SEMICONDUCTOR MEMORY DEVICE WITH NAND CELL STRUCTURE

Hiroshi Iwahashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 28, 1988, Ser. No. 212,649

Claims priority, application Japan, Jun. 29, 1987, 62-161625; Jun. 30, 1987, 62-163023; Dec. 23, 1987, 62-325686

Int. Cl.[5] G11C *11/40*

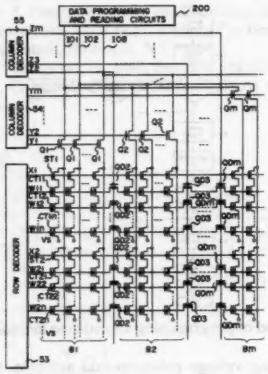
U.S. Cl. 360—185 **36 Claims**

1. A nonvolatile semiconductor memory device comprising:

a memory cell array having memory cells arranged in matrix form and each of said memory cells is formed by a plurality of serially connected cell transistors, each of said cell transistors, having a control gate, a floating gate, a source and a drain;

selection means for selecting one of said memory cells and one of said cell transistors of a selected memory cell; and

data programming means for programming a binary data to said cell transistor, connected to said memory cell, said data programming means applying a first potential to said control gate of said selected cell transistor and applying a second potential to said drain of said selected cell transistor when said binary data is a first logic level, said second potential being higher than said first potential, said first



and second applied potential tunneling electrons to said drain from said floating gate of said cell transistor, and said data program means applying a third potential to said drain of said selected cell transistor and applying a fourth potential to said control gate of said selected cell transistor when said binary data is a second logic level, said fourth potential being higher than said third potential, said third and fourth applied potential tunneling electrons to said floating gate from said drain of said cell transistor.

5,008,857

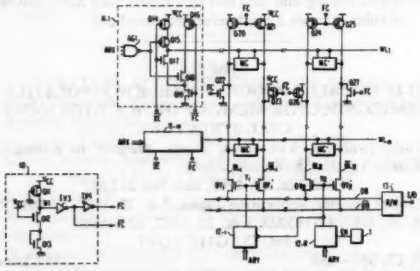
SEMICONDUCTOR MEMORY DEVICE PROVIDED WITH AN IMPROVED SYSTEM FOR DETECTING THE POSITIONS USING A REDUNDANT STRUCTURE

Akane Mizoguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 385,528, Jul. 27, 1989, abandoned. This application Aug. 8, 1990, Ser. No. 563,890

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—200 **5 Claims**



1. A semiconductor memory device comprising:

a plurality of normal memory cells;

at least one redundant memory cell;

means for receiving address information;

a selection circuit coupled to said normal memory cells and said redundant memory cell, said selection circuit operatively selecting one of said normal memory cells in accordance with said address information when said normal memory cell corresponding to said address information is operable and selecting said redundant memory cell when said normal memory cell corresponding to said address information is defective;

a read-write circuit coupled to said selection circuit for performing a read operation of the selected memory cell in a read mode and a write operation to the selected memory cell in a write operation;

a power voltage terminal for receiving a power voltage;

a detection circuit coupled to said power voltage terminal for generating a detection signal when said power voltage is initiated to be applied to said power voltage terminal;

a first initializing circuit for setting said normal memory cells at a first logic state in response to said detection signal; and

a second initializing circuit for setting said redundant memory cell at a second logic state different from said first logic state in response to said detection signal.

5,008,858

ASYNCHRONOUS SEMICONDUCTOR MEMORY HAVING ADDRESS TRANSITION DETECTOR

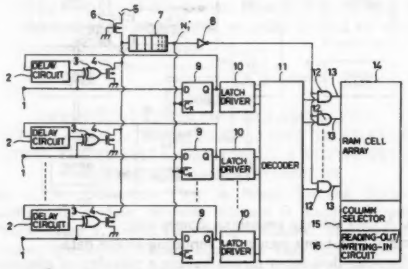
Setsuko Ikeda, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 24, 1989, Ser. No. 398,235

Claims priority, application Japan, Aug. 25, 1988, 63-212227

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—233.5 **4 Claims**



1. An asynchronous semiconductor memory comprising a memory cell array including a plurality of memory cells, means for receiving address signals , a detection circuit including a latch circuit, said detection circuit generating a detection signal when at least one of said address signals is changed;

a first transistor in said detecting circuit;

a second transistor opposite polarity of said first transistor having a source connected to a power source terminal;

an invertor; and

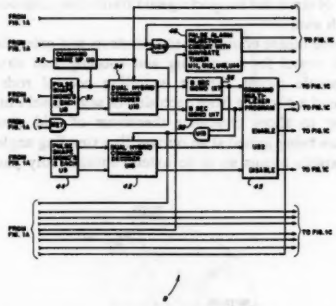
a programmable delay circuit including delay circuit elements having delay amounts corresponding to desired clock widths, said delay circuit elements being series-connected to constitute a multi-stage delay circuit having an input terminal connected to a drain of said second transistor and connected to a drain of said first transistor and having an output terminal connected to said invertor and to said latch circuit of said detecting circuit, a delay time of said programmable delay circuit being programmed to one of a plurality of predetermined values, means for applying said detection signal to the input terminal of said multi-stage delay circuit to generate a delay signal at the output terminal thereof, a decoder responsive to said address signals for operatively selecting at least one of said memory cells, and control means responsive to said delay signal for enabling said decoder.

5,008,859

ACOUSTIC TRANSPONDER RECEIVER CIRCUIT

Reginald Cyr, Santa Barbara, Calif., assignor to United States of America, Washington, D.C.

Filed Dec. 7, 1988, Ser. No. 281,139
Int. Cl.[5] H04B 1/59
U.S. Cl. 367—2 4 Claims



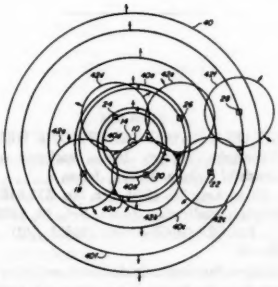
1. A transponder receiver circuit, comprising:
(a) Transducer means for receiving a first input signal and for receiving a second input signal;
(b) A detector means connected to the transducer means for initiating a first navigate signal in response to the first input signal and for initiating a first command signal in response to the second input signal;
(c) Means for supplying electrical power in response to the first command signal;
(d) Another detector means connected to the transducer means and activatable by said electrical power, for initiating a second navigate signal in response tot he second input signal and for initiating a second command signal in response to the second input signal; and
(e) Means for initiating a first response signal in response to the first navigate signal and for initiating a second response signal in response to both the first command signal and the second command signal.

5,008,860

POSITION AND VELOCITY MEASURING SYSTEM

Thomas P. Riley, Westport, Mass.; Martin Buffman, Little Compton, R.I., and Reginald J. Cyr, Santa Barbara, Calif., assignors to United States of America, Washington, D.C.

Filed Mar. 16, 1989, Ser. No. 336,452
Int. Cl.[5] H04B 1/59
U.S. Cl. 367—6 1 Claim



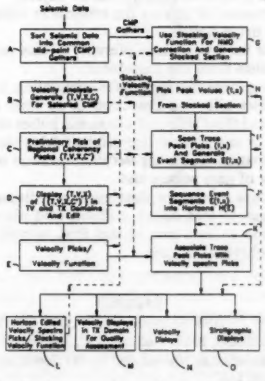
1. A position and velocity determining system for a vehicle in an ocean, comprising;
(a) first means located on a vehicle for transmitting either a first acoustic pulse or a second acoustic signal toward an area of an ocean floor;
(b) a plurality of two functioned receiver-transmitters substantially fixed in known locations of said area, each having a first function for receiving the first acoustic pulse and for immediately responding by transmitting an acoustic pulse at a unique frequency that is known to the vehicle, and each having a second function for receiving the second acoustic signal and for transmitting an acoustic signal of a unique fixed frequency that is known to the vehicle, the latter transmissions continuing for at least several seconds;
(c) third means located on the vehicle for receiving the acoustic pulses;
(d) fourth means located on the vehicle for determining the time difference between the transmission of the first acoustic pulse and the reception of the acoustic pulses from the receiver-transmitter;
(e) fifth means located on the vehicle for determining the positions of the vehicle relative to said known locations, based on said time differences;
(f) sixth means located on the vehicle for receiving the acoustic signals from the receiver-transmitters;
(g) seventh means located on the vehicle for determining the apparent frequencies of the acoustic signals received from the receiver-transmitters;
(h) eighth means located on the vehicle for determining any differences in frequency between the apparent frequencies and the unique fixed frequencies of the acoustic signals received from the receivers-transmitters; and
(i) ninth means located on the vehicle for determining the velocities of the vehicle relative to said locations, based on determined differences in frequency and said determined positions of the vehicle relative to said known locations.

5,008,861

GEOPHYSICAL EXPLORATION BY AUTOMATICALLY PICKING AND ASSOCIATING STACKED SEISMIC SECTIONS WITH REGIONAL COHERENCY PEAKS OF VELOCITY SPECTRA

John N. Gallagher, Tulsa, Okla., assignor to Amoco Corporation, Chicago, Ill.

Filed Mar. 6, 1989, Ser. No. 319,609
Int. Cl.[5] G01V 1/36, 1/34
U.S. Cl. 367—59 52 Claims


Seismic Data
CMP Gathers
Sort Seismic Data Into Common Mid-Point (CMP) Gathers
Use Stacking Velocity Function For NMO Correction And Generate Stacked Section
Velocity Analysis Generate (T,V,X,C) For Selected CMP
Stacking Velocity Function
Pick Peak Values (t,a) From Stacked Section
Preliminary Pick of Regional Coherency Peaks (T,V,X,C')
Scan Trace Peak Picks (t,a) And Generate Event Segments E(t,a)
Display (T,V,X) or (T,V,X,C') In TV and TX Domains And Edit
Sequence Event Segments E(t,a) Into Horizons H(t)
Velocity Picks/ Velocity Function
Associate Trace Peak Picks With Velocity Spectra Picks
Horizon Edited Velocity Spectra Picks/ Stacking Velocity Function
Velocity Displays In TX Domain For Quality Assessment
Velocity Displays
Stratigraphic Displays

1. A method of processing seismic data for geophysical exploration comprising:
providing a first set of data points generated from seismic traces;
providing a second set of data points generated from seismic traces;

the second set of data points having a smaller number of data points therein than the first set of data points;

the first and second sets of data points having a common parameter represented by a variable in each of the first and second sets of data points; and

editing the first set by associating data points of the first set to data points of the second set according to the variable in each of the first and second sets of data points representing the common parameter and generating a set of one-to-one corresponding data points of the first and second sets, the set of one to one corresponding data points comprising a set of associated data points in which each data point of the second data set is associated with one and only one data point from the first data set.

5,008,862

OBJECT DETECTING SWITCH DEVICE

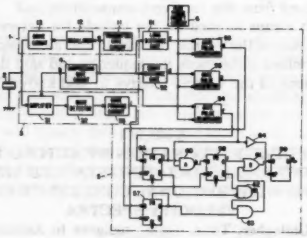
Hiroshi Shimamoto, Yokohama; Hideyuki Suzaki, Ohtsu; Yukio Yamaguchi, Nagaokakyo, and Atsushi Kawano, Nagoya, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 92,358, Sep. 2, 1987, abandoned. This application Jan. 18, 1990, Ser. No. 465,603

Claims priority, application Japan, Sep. 2, 1986, 61-207455

Int. Cl.[5] G01S *15/08*

U.S. Cl. 367—105 **9 Claims**



1. A switch device, comprising:

a transducer for emitting ultrasonic pulses to and receiving reflected ultrasonic pulses from an object;

a driving means for driving the transducer with at least one original drive signal;

a processor for processing a plurality of said reflected ultrasonic pulses from the transducer;

gate pulse generating means for generating a plurality of gate pulses allowing detection of at least two of first, second and third reflected ultrasonic pulses corresponding to each of said at least one original drive signals;

a pulse variation means for varying duration of any of said plurality of gate pulses; and

determination means for determining a distance from the transducer to said object utilizing said plurality of gate pulses and at least two of said first, second or third reflected ultrasonic pulses.

5,008,863

LOW NOISE SONAR SUPPORT SYSTEM

Frank S. Archibald, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 4, 1979, Ser. No. 47,551

Int. Cl.[5] H04R *17/00*

U.S. Cl. 367—165 **2 Claims**

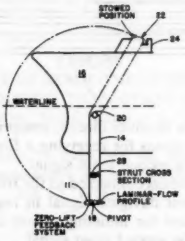
1. A sonar support system for deploying a sonar array remote from a vessel comprising:

a transversely extended hydrofoil-shaped member adapted for deployment beneath said vessel, said transverse member being pivotable in the streamed position and further including means for determining the position of zero lift therein at various vessel attitudes and means including a feedback system for pivoting said transverse member to a zero-lift position and maintaining said member at said position;

a sonar array positioned in said transverse member;

a pair of struts for supporting said transverse member, one at each end;

rotatable means connected to said struts and extending from said vessel for supporting and rotating said struts, said rotatable means further including coaxial rods which extend a distance from each side of said vessel's hull sufficient to allow clearance therefrom of said struts, said struts being joined at an outwardly extending angle to said rotatable means so as to extend substantially parallel to



said vessel's hull when in the vertically upward position, said struts being turned at an inwardly extending angle substantially at the vessel's gunwhale in the vertically upward position so as to converge and said transverse member connected to said converging struts at points sufficient to allow clearance of said vessel's underbody when in the vertically downward position;

a sonar system in said vessel and means connecting said sonar array to said sonar system;

means for rotating said rotatable means so as to pivot said transverse member between a position beneath said vessel, clear of the bow thereof, and a position on the deck of said vessel; and

means on the deck of said vessel for nesting said transverse member, whereby said sonar array may be deployed at selected depths beneath said vessel and readily removed for maintenance and when necessary to limit the draft of the vessel.

5,008,864

PORTABLE RADIO TELEPHONE DEVICE

Kunitoshi Yoshitake, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1990, Ser. No. 571,810

Claims priority, application Japan, Feb. 15, 1990, 2-34659

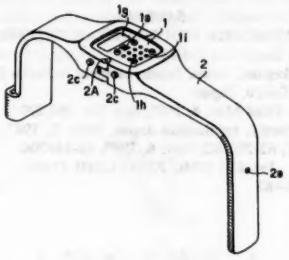
Int. Cl.[5] G04B *47/00*; H04M *1/05*

U.S. Cl. 368—10 **4 Claims**

1. A portable radiotelephone device in which a radio device body is carried in the form of a wristwatch with a carrying strap, said radiotelephone device comprising:

a power source portion and an antenna portion for said radio device body provided on said carrying strap; and

a voice transmission tube connected to a transmitter or a receiver of said radio device body, provided within said



carrying strap and terminating at a predetermined position of said carrying strap.

5,008,865

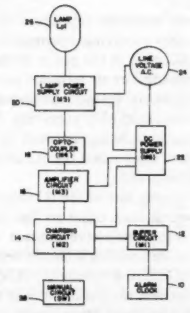
LIGHT SOURCE WITH GRADUALLY CHANGING INTENSITY

Blaine P. Shaffer, 12305 9th Ave., SW., Seattle, Wash. 98146, and William G. Haab, Bothell, Wash., assignors to Blaine P. Shaffer, Seattle, Wash.

Continuation-in-part of Ser. No. 221,716, Jul. 20, 1988, abandoned. This application May 17, 1990, Ser. No. 525,877

Int. Cl.[5] G06B *47/00*; G04C *21/16*

U.S. Cl. 368—10 **1 Claim**



1. An apparatus for varying the brightness of a light in a smooth and gradual manner, comprising:

an A.C. power supply source means for providing power to said light at a frequency and power generally available on a power distribution system, said A.C. power supply having zero crossings;

a zero crossing sensor means for sensing each zero crossing of said A.C. power supply and outputting a zero crossing signal at each of said zero crossings;

an oscillator circuit coupled to the output of said zero crossing sensor and receiving said zero crossing signals, said oscillator circuit outputting an oscillating frequency signal having a plurality of zero crossing points in between each zero of said A.C. power supply and at least one of said oscillator zero crossings occurring simultaneously with said A.C. power supply zero crossings;

a micro computer circuit having an internal timing clock controlled by said oscillator's zero crossings to ensure that said timing clock generates pulses whose occurrence is exactly positioned relative to said zero cross of said A.C. signal, said micro computer circuit including a trigger, a pulse output line, and an input signal line, said trigger pulse output line going high at a selected time after said A.C. signal zero crossing as measured by said internal timing clock, said selected time being variable from a first time after said zero crossing to a second time after said zero crossing, said second time occurring more closely after said A.C. zero crossing than said first time occurs after said A.C. zero crossing, said selected time gradually varying from said first time to said second time after said input signal goes high;

a gate circuit coupled to said trigger pulse output line, said gate circuit going high when said trigger pulse line goes high; and

a triac circuit having its gate coupled to said gate circuit for causing said triac circuit to turn on and provide power to said light from said trigger pulse output going high until said A.C. power supply passes through a subsequent zero crossing to thus control the intensity of said light based on said selected time of said trigger output line going high.

5,008,866

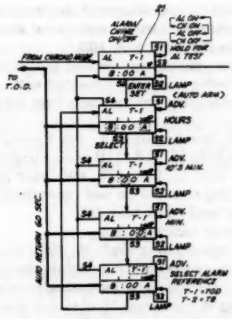
ALARM SETTING PROGRAM FOR ALARM TIMEPIECE WITH ALTERNATE TIME ZONE

Tom Thinesen, San Jose, Calif., assignor to Timex Corporation, Middlebury, Conn.

Filed Jan. 16, 1990, Ser. No. 466,101

Int. Cl.[5] G04B *19/22*

U.S. Cl. 368—21 **4 Claims**



1. In a multimode electronic timepiece having a display, an audible alarm device, a plurality of manually actuated switches, and an integrated circuit programmed to keep time and to provide a plurality of modes, including time-of-day, alternate time zone and alarm setting modes, said integrated circuit also being programmed to permit an operator to set time-of-day in response to actuation of selected switches, to set alternate time zone time in response to actuation of selected switches and to set alarm set time in an alarm setting mode in response to actuation of selected switches, said integrated circuit having a memory location for storing time-of-day and being programmed to selectively actuate said audible alarm device when said alarm set time corresponds to time-of-day in said memory location, the improvement comprising:

flag means selected in response to actuation of one of said switches while in said alarm setting mode adapted to

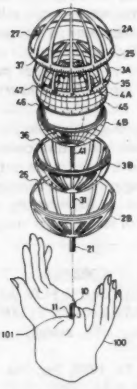
select either said alternate time zone time or time-of-day, whereby said audible alarm device may be actuated when the alarm set time corresponds either to time-of-day or to alternate time zone in response to setting of said flag means.

5,008,867

ORNAMENTAL CLOCK WITH DECORATIVE TIME INDICATING DEVICE

Wei C. Ko, No. 36, Alley 53, Lane 514, Chung Cheng Rd., Hsin Chuang City, Taipei Hsien, Taiwan

Filed Jul. 23, 1990, Ser. No. 555,604
Int. Cl.[5] G04B *19/22*
U.S. Cl. 368—23 **4 Claims**



1. An ornamental clock with decorative time indicating device comprising:

a clock machanism **5**;

a clock base **100** for receiving said clock machanism **5** having a connector **10'** formed with outer thread extending upward from the clock base **100**;

an original hour, minute and second indicating connectors **20'**, **30'**, **40'** being co-axially provided within said connector **10'** and extending upward thereform with their respective height;

a thread sleeve member **10**, **10A**, **10B** formed with a lower inner thread hole **11**, **11A**, **11B** and an upper small diameter through hole **12**, **12A**, **12B**, said inner thread hole **11**, **11A**, **11B** being screwed on said outer thread of said connector **10'** of said clock base **100**;

a decorative hour indicator **2**;

an hour indicator rotating shaft **20**, **20A**, inner surface **22**, **22A** of lower end of which is tightly fitted to the upper end of said original hour indicating connector **20'**, and outer surface of upper end **23** of which is associated with said decorative hour indicator **2**;

a decorative minute indicator **3**;

a minute indicator rotating shaft **30**, **30A**, outer surface of lower end **31** of which closely rotatably contacts with inner surface **24** of upper end of said hour indicating rotating shaft **20**, **20A**, and inner surface of lower end **32** of which is tightly fitted to said original minute indicator connector **30'**, and the outer surface **33** of upper end of which is associated with said decorative minute indicator **3**;

a decorative second indicator **4**; and

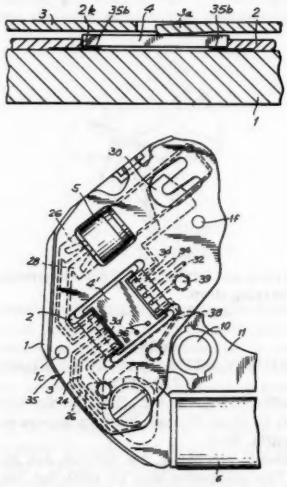
a second indicator rotating shaft **40**, **40A**, outer surface of lower end **41** of which closely rotatably contacts with inner surface **34** of upper end of said minute indicator rotating shaft **30**, **30A**, and inner surface of lower end **42** of which is tightly fitted to said original second indicator connector **40'**, and outer surface **43**, **43A** of upper end of which is associated with said decorative second indicator **4**.

5,008,868

STRUCTURE FOR MOUNTING AN INTEGRATED CIRCUIT

Toshimasa Ikegami, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 4, 1988, Ser. No. 164,299
Claims priority, application Japan, Mar. 5, 1987, 62-50584; Nov. 6, 1987, 62-280502; Nov. 6, 1987, 62-169704
Int. Cl.[5] G04C *23/00*; **G04B** *37/00*
U.S. Cl. 368—88 **23 Claims**



1. A structure for mounting an integrated circuit chip ("IC chip") having a plurality of chip terminals within a timepiece, comprising:

a timepiece frame;

an insulating circuit substrate supported on the frame and formed with a chip receiving opening for receiving and positioning the IC chip in the plane of the substrate;

a circuit pattern having circuit terminal portions formed as leaf springs selectively formed on the circuit substrate overhanging within said chip receiving opening, the circuit terminal portions being adapted to contact corresponding chip terminals when the IC chip is mounted on the circuit substrate; and

biasing means for biasing one of the IC chip or circuit terminal portions towards each other so that the chip terminal portions come into conductive contact with the circuit terminal portions for forming a circuit between the circuit pattern and the IC chip, whereby the IC chip is supported between the frame and the biasing means without the need for adhesives or additional containment structure.

5,008,869

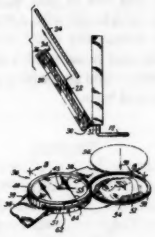
TRANSPARENT DIAL FACE WATCH WITH REPLACEABLE VISUAL DISPLAY

Mark Dweck, Great Neck, N.Y., assignor to Colony Corporation, Scarsdale, N.Y.

Filed Apr. 11, 1990, Ser. No. 507,951
Int. Cl.[5] G04B *19/06, 19/04*
U.S. Cl. 368—228 **20 Claims**

1. A watch comprising a transparent front member, visually-

perceptive liquid crystal indicia of time contained in said transparent front member, rear watch stemless mechanism means for controlling the liquid crystal display of said visually-perceptive indicia of time in said transparent front member, and means in juxtaposed relation with said transparent front member for retaining within said watch a visual display observable through said transparent front member and liquid crystal indicia, said retaining means comprising unobstructed stem free compartment means arranged between said transparent front member and said rear watch mechanism means for freely receiving and retaining said visual display in juxtaposed relation to said visually-perceptive indicia of time, whereby said display can be observed through said transparent front member simultaneously with said visually-perceptive indicia of time.



5,008,870

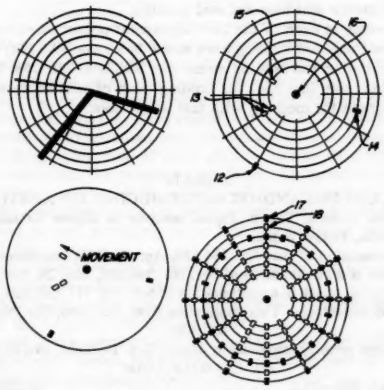
FIFO CLOCK

James R. Vessa, 8833 Bay Pointe Dr., Tampa, Fla. 33615

Filed Jun. 28, 1988, Ser. No. 212,471

Int. Cl.[5] G04C *17/00*

U.S. Cl. 368—242 **16 Claims**



1. An electronic timepiece comprising:

a display having a center position and twelve columns, each of said twelve columns having at least five display elements extending in a radial direction from said center position, respective display elements of each of said twelve columns further defining at least five concentric rows, one row of at least said five rows defining a five minute hand row an other row of said plurality of rows being an hour hand row, each of said display elements selectively operable to produce a visual signal when energized, and

means for selectively energizing display elements of said twelve columns, said means for energizing having a timebase and means for timekeeping, said means for timekeeping having means for sequentially radially energizing at least four display elements along a selected column of said twelve columns, whereby said at least four display elements are illuminated by said means for timekeeping such that the illumination of each display element denotes the passage of a unit of time being registered by said display.

5,008,871

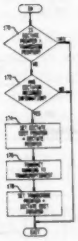
DICTATE/TRANSCRIBE CONTROL FOR DIGITAL DICTATION SYSTEM

Joseph A. Howells, 10 Old Woods Rd., Brookfield Center, Conn. 06804; Emil F. Jachmann, 34 Harborview Pl., Stratford, Conn. 06497, and Robert L. Rubenstein, 46 Mohawk Dr., Norwalk, Conn. 06855

Filed Dec. 22, 1988, Ser. No. 289,555

Int. Cl.[5] G11B *27/031*

U.S. Cl. 369—28 **14 Claims**



1. A digital dictation system having a central store accessible concurrently by at least one dictator to record and/or receive messages at a changing dictator position in said store and by a transcriptionist to transcribe messages from a changing transcriptionist position in said store, said system comprising.

dictate review means for enabling a dictator to review a message then being transcribed by said transcriptionist;

record means operable by said dictator to record information including an edit in the message then being transcribed by said transcriptionist; and

transcribe playback means conditioned automatically to play back to said transcriptionist at least the edit in the message recorded by said dictator if said edit is made at a portion of the message which has been transcribed by said transcriptionist.

5,008,872

OPTICAL DISC REPRODUCTION APPARATUS WHICH DETECTS MAXIMUM AUDIO SIGNAL LEVEL RECORDED ON AN OPTICAL DISK

Haruhisa Tomoda, Neyagawa, and Yasuomi Shimada, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 21, 1988, Ser. No. 171,471

Claims priority, application Japan, Mar. 20, 1987, 62-66431

Int. Cl.[5] G11B *21/10, 21/12*

U.S. Cl. 369—32 **14 Claims**

1. An optical disc reproduction apparatus for audibly reproducing signals recorded on an optical disc and for detecting a peak audio level of signals recorded on the optical disc, the optical disc having on a surface thereof a plurality of generally concentric recording tracks, said optical disc reproduction apparatus comprising:

a reading means for reading the signals recorded on the optical disc and for outputting an audible signal in accordance with the thus read signals on the optical disc;

a signal level detecting means for detecting and outputting

an audio signal level of the signals recorded on the optical disc and read by said reading means;

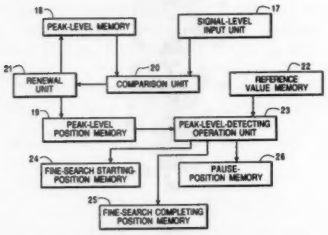
a peak level memory means for storing a maximum value of the audio signal level detected by said signal level detecting means;

a peak level position memory means for storing a location on the optical disc of the signals having the value of the audio signal level stored in said peak level memory means;

a comparing means for comparing a value of the audio signal level stored in said peak level memory means and a value of the audio signal level output by said signal level detecting means;

a renewal means for resetting the value stored in said peak level memory means and the location stored in said peak level position memory means when the value of the audio signal level output by said signal level detecting means exceeds the value of the audio signal level stored in said peak level memory means;

a reference value memory means for storing a plurality of preselected reference values;



an operating means for effecting a first search of the optical disc by causing said reading means to sequentially read every N tracks of the optical disc, and for storing in said peak level position memory means a first location on the optical disc in which a maximum value of the audio signal level was detected during said first search, and for effecting a second search of the optical disc by calculating a start-search location and an end-search location based on the first location on the optical disc and reference values stored in said reference value memory means and by causing said reading means to sequentially read every M tracks on the optical disc from the start-search location to the end-search location, and for storing in said peak level position memory means a second location on the optical disc in which a maximum value of the audio signal level was detected during said second search, and for calculating a pause position on the optical disc in accordance with the second location on the optical disc and the reference values stored in said reference value memory means; and,

a means for storing said start-search location, said end-search location, and said pause position,

wherein N and M are integers and M is less than N.

5,008,873

TILT ADJUSTMENT MECHANISM FOR OBJECT LENS DRIVING DEVICE

Toshiyuki Tanaka, Osaka, and Etsuji Minami, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 4, 1989, Ser. No. 347,210

Claims priority, application Japan, May 7, 1988, 63-111286

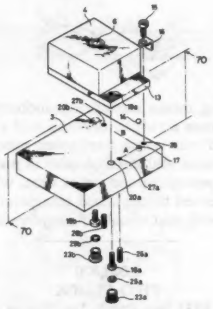
Int. Cl.[5] G11B *7/08*

U.S. Cl. 369—44.14 **6 Claims**

1. A tilt adjustment mechanism for an object lens driving device, wherein the tilt of an object lens driving device (**4**) with respect to a housing (**3**) provided with an optical system is adjusted so that the central axis of an object lens (**6**) provided to said object lens driving device and adapted for forming a light spot on a recording medium (**1***a*) is substantially parallel to an optical axis (**7***a*) of a light beam of said optical system irradiated on said object lens, in which the information is optically written to or read from said recording medium (**1***a*), said tilt adjustment mechanism comprising

a base (**13**) holding the object lens driving device;

a housing (**3**) including a supporting point (**17**) supporting the base and two adjustment points (**20***a*, **20***b*; **20***c*; **20***d*), said supporting point and the adjustment points being so arranged that a straight line interconnecting said one supporting point and one of said adjustment points substantially make a right angle with a straight line interconnecting said one supporting point and the other of said adjustment points, said housing also including a concave portion (**17**) formed at said supporting point on the surface thereof facing to said base,



a spherical supporting member (**14**) fitted into said concave portion and interposed between said base and said housing to perform a point contact therewith; and

adjustment screws (**18***a*, **18***b*; **18***c*; **18***d*) provided at each of said two adjustment points for modifying the distance between said base and said housing;

wherein, at each of the two adjustment points, one of said base and said housing has a screw hole (**19***a*; **19***c*; **19***d*) and the other has holding means (**3***c*; **13***d*, **23***a*, **23***b*, **25***a*, **25***b*, **26***a*, **26***b*; **25***c*; **25***d*) for holding each of said adjustment screws for meshing with said screw hole.

5,008,874

RECORDING AND/OR REPRODUCING APPARATUS

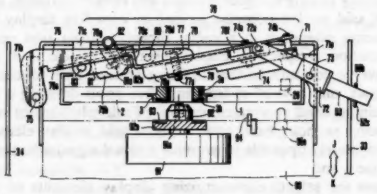
Tsukasa Uehara, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 334,810, Apr. 6, 1989, abandoned, which is a continuation of Ser. No. 148,130, Jan. 26, 1988, abandoned, which is a continuation of Ser. No. 777,235, Sep. 18, 1985, abandoned. This application Mar. 22, 1990, Ser. No. 497,835

Claims priority, application Japan, Sep. 19, 1984, 59-196354

Int. Cl.[5] G11B *17/04*

U.S. Cl. 369—75.2 **19 Claims**



1. A loading apparatus, for loading a record bearing medium container having a positioning hole for positioning said container in a predetermined loaded position, comprising:

an engaging member arranged to engage with said positioning hole;

urging means for urging said engaging member to engage said positioning hole;

moving means for moving said engaging member, in a state in which said engaging member is engaged with said positioning hole, to load said container to said predetermined loaded position;

a disengaging member arranged to disengage said engaging member from said positioning hole in said loaded position; and

a positioning member for positioning said container at said loaded position by engaging with said positioning hole of said container.

5,008,875

OPTICAL DISC REPRODUCING APPARATUS HAVING DISPLAY INDICATING PROGRAM STATUS

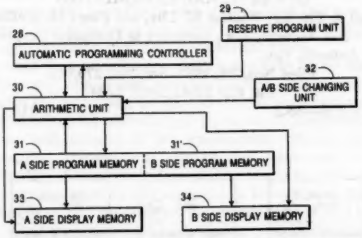
Haruhisa Tomoda, Kashihara, and Yasuomi Shimada, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 7, 1988, Ser. No. 241,235

Claims priority, application Japan, Sep. 8, 1987, 62-224341

Int. Cl.[5] G11B *7/28, 27/02*

U.S. Cl. 369—85 **2 Claims**



1. A programming device of an optical disc reproducing apparatus, the optical disc reproducing apparatus for reproducing recorded information recorded on an optical disc, the recorded information including a plurality of discrete audio selections and index numbers identifying each of the plurality of discrete audio selections and playing time information indicating the playing time of each of the plurality of discrete audio selections, the programming device for programming the playing sequence of the plurality of discrete audio selections for recording onto a magnetic recording medium having first and second recording sides, said programming device comprising:

signal detection means for detecting the recording information recorded on the optical disc;

recording time input means for inputting of a recording time of the magnetic recording medium;

recording the memory means, coupled to said recording time input means, for storing the recording time of the magnetic recording medium;

arithmetic means, coupled to said signal detecting means and said recording time memory means, for determining which of the discrete audio selections are to be recorded on each of the first and second recording sides of the magnetic tape in accordance with the recording time of the magnetic tape and the playing time information of the discrete audio selections, and for calculating respectively for each of the first and second recording sides of the magnetic tape first and second remainder times denoting a difference between the recording time of the first and second recording sides and a total of the playing times of the discrete audio selections to be recorded on the first and second recording sides;

a first side audio selection memory means, coupled to said arithmetic means, for storing the index numbers of the discrete audio selections determined by said arithmetic means to be recorded on the first side of the magnetic recording medium;

a second side audio selection memory means, coupled to said arithmetic means, for storing the index numbers of the discrete audio selections determined by said arithmetic means to be recorded on the second side of the magnetic medium;

a first side display memory means, coupled to said arithmetic means and said first audio selection memory means, for storing as first side display information at least one of the first remainder time calculated by said arithmetic means and the index numbers stored in said first side audio selection memory means;

a second side display memory means, coupled to said arithmetic means and said second audio selection memory means, for storing as second side display information at least one of the second remainder time calculated by said arithmetic means and the index numbers stored in said second side audio selection memory means; and,

a display means, having a first display region and a second display region and coupled to said first and second side display memory means, for displaying in said first display region the first side display information stored in said first side display memory means and for displaying in said second display region the second side display information stored in said second side display memory means.

5,008,876

CARRIAGE LOCK APPARATUS

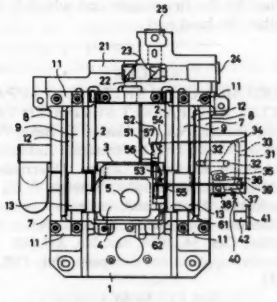
Toshio Nakagishi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1989, Ser. No. 437,971

Claims priority, application Japan, Nov. 14, 1988, 63-287410

Int. Cl.[5] G11B *17/00, 17/30*

U.S. Cl. 369—244 **20 Claims**



1. A carriage lock apparatus, comprising:

a head for recording or playing back information on a rotating disk;

a carriage on which said head is mounted;

first means for moving said carriage in a radial direction on said disk;

first engaging means, said first engaging means having a first engaging portion with a first pitch that moves in association with a movement of said carriage in the radial direction of said disk;

second engaging means, said second engaging means having a second engaging portion with a second pitch that is different from said first pitch of said first engaging portion, said second engaging portion being located at a specific position so that said second engaging portion can engage said first engaging portion; and

means for engaging or disengaging said first and second engaging portions.

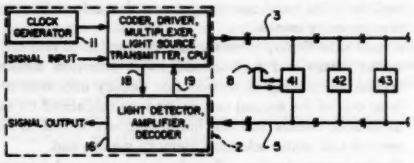
5,008,877
OPTICAL SIGNAL RECOVERY FOR DISTRIBUTION COMMUNICATION SYSTEM

Frank H. Levinson, Redwood City, Calif., assignor to Raychem Corp., Menlo Park, Calif.

Continuation-in-part of Ser. No. 935,458, Nov. 25, 1986. This application Nov. 12, 1987, Ser. No. 120,308

Int. Cl.[5] H04J *14/08*

U.S. Cl. 370—4 **16 Claims**



1. A distribution communication system, comprising:

a head end including a transmitter, a receiver, and a clock generator which generates a system clock frequency from which a packet transmission frequency can be derived;

a plurality of terminals remote from the head end;

first means for transmitting first information from the transmitter to the remote terminals and for transmitting second information from the remote terminals to the head end receiver, the first information being encoded so that the system clock frequency is derivable therefrom by the remote terminals, the terminals transmitting the second information onto a talk bus in an asynchronous time multiplexed packet format utilizing a plurality of packets which are out of phase with one another, the second information being transmitted at a transmission frequency;

second means for transmitting the system clock frequency within the head end from the clock generator to the head end receiver along a communication path different from that defined by the first means and which is located entirely within the head end.

5,008,878
HIGH-SPEED MODULAR SWITCHING APPARATUS FOR CIRCUIT AND PACKET SWITCHED TRAFFIC

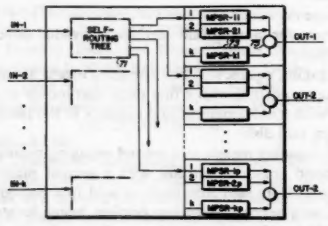
Hamid Ahmadi, Somers, N.Y.; Johannes G. Beha; Wolfgang E. Denzel, both of Waederswil, Switzerland; Antonius P. Engbersen, Richterswil; Ronald P. Luijten, Oberrieden, both of Switzerland; Charles A. Murphy, Raleigh, N.C., and Erich Port, Rueschlikon, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 14, 1988, Ser. No. 257,656

Claims priority, application European Pat. Off., Nov. 30, 1987, 87115341

Int. Cl.[5] H04J *3/26*

U.S. Cl. 370—60 **8 Claims**



1. Apparatus for transferring packet switched or circuit switched information from a plurality of incoming transmission links connected to an input switch adapter means through a self-routing switching fabric means to an output switch adapter means to a plurality of output ports attached via an output switch adapter means to a plurality of outgoing transmission links employing a plurality of minipackets, comprising:

(a) input switch adapter means for receiving the packet switched or circuit switched information from the incoming transmission links and for forming a minipacket from the packet switched or circuit switched information including a local routing address;

(b) self-routing switching fabric means consisting of at least one set of parallel switching slices and having a plurality of input ports and output ports, the parallel switching slices having non-overlapping paths between input ports and output ports, the input ports receiving the minipackets from the input switch adapter means and sending the minipackets through the self routing switching fabric to an output port specified in the local routing address; and

(c) output switch adapter means for joining the output port of the self-routing switching fabric means to an outgoing transmission link and for converting the common information format to packet switched or circuit switched information to transmit on the outgoing transmission link.

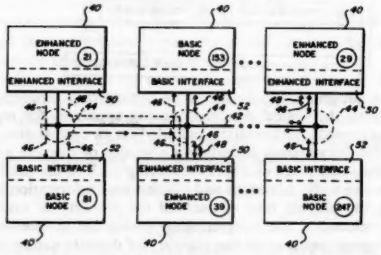
5,008,879
LAN WITH INTEROPERATIVE MULTIPLE OPERATIONAL CAPABILITIES

Michael A. Fischer; William M. Cox, and Floyd H. McDougall, all of San Antonio, Tex., assignors to Datapoint Corporation, San Antonio, Tex.

Filed Nov. 14, 1988, Ser. No. 270,641

Int. Cl.[5] H04J *3/02, 3/24*

U.S. Cl. 370—85.2 **115 Claims**



1. A local area network or LAN, comprising:

a plurality of at least three nodes which include a first group having at least two of said nodes therein and a second group having at least two of said nodes therein;

a communication medium connecting the nodes;

interface means associated with the first group of nodes and operative for supplying signals to the medium to establish network operational activity and for communicating information between selected nodes in predetermined signals applied at selected regularly occurring intervals in compliance with a first predetermined communication protocol;

interface means associated with the second group of nodes and operative for supplying signals to the medium to establish network operational activity and for communicating information between selected nodes in predetermined signals applied at selected regularly occurring intervals in compliance with a second predetermined communication protocol; and wherein:

the first and second protocols are different; and

the signals are applied in predetermined patterns to create network operational activity in both protocols while simultaneously communicating information in a selected one of the first or second protocols.

5,008,880
DATA TRANSMISSION APPARATUS

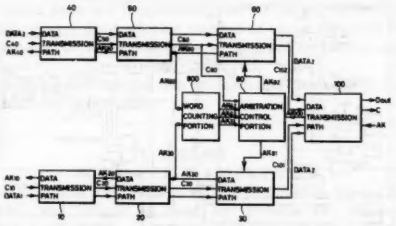
Daisuke Azuma, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 14, 1989, Ser. No. 323,021

Claims priority, application Japan, Mar. 14, 1988, 63-61587; Mar. 14, 1988, 63-61588

Int. Cl.[5] H04J *3/26*

U.S. Cl. 370—85.6 **20 Claims**



1. A data transmission apparatus for sending out to a succeeding stage in series a plurality of data applied from a preceding stage, comprising:

a plurality of single direction first data transmission paths receiving the plurality of data applied from said preceding stage, priorities being respectively given to the plurality of single direction first data transmission paths,

a second data transmission path selectively receiving data from any one of said plurality of first data transmission paths for outputting the data to said succeeding stage, and

control means for controlling the priority of data transmitted from said plurality of first transmission paths to said second data transmission path so that when each of said plurality of transmission paths simultaneously receive data for transmission to said second data transmission path the data from said plurality of transmission paths will be forwarded to said second transmission path in order of said priority.

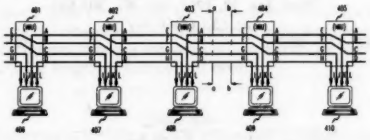
5,008,881
CHORDAL RING NETWORK

Mark J. Karol, Fair Haven, N.J., assignor to AT&T Bell Laboratories, Murry Hill, N.J.

Filed May 18, 1990, Ser. No. 526,097

Int. Cl.[5] H04R *3/00*

U.S. Cl. 370—85.150 **9 Claims**



1. A chordal network comprising:

a plurality of Network Interface Units (NIUs), each NIU including a plurality of inputs in a predetermined sequence, a plurality of outputs in a predetermined sequence, at least two user equipment ports, and a plurality of connections from predetermined inputs to predetermined outputs, at least one connection being cut within the NIU to form two ends, the ends each being routed to a separate user equipment port, at least two NIUs being substantially identical, and including a substantially identical sequence of inputs;

a multiple portion communications medium, each portion connecting two NIUs and comprising a plurality of channels, at least one portion connecting two identical NIUs, each channel in the portion connecting two identical NIUs connecting a separate output of a first NIU to a separate input of a second NIU, each output of the first NIU also being connected to a separate input of the first NIU, the input to the first NIU and to the second NIU differing in their respective positions in the sequence of inputs by a fixed number of positions for each channel in the portion.

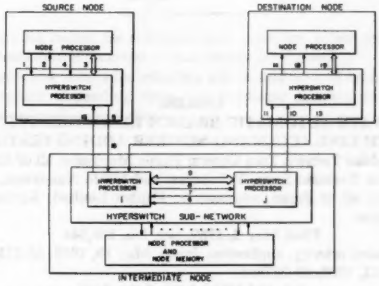
5,008,882
METHOD AND APPARATUS FOR ELIMINATING UNSUCCESSFUL TRIES IN A SEARCH TREE

John C. Peterson, Alta Loma; Edward Chow, San Dimas, and Herb S. Madan, Marina del Rey, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Aug. 17, 1987, Ser. No. 86,722

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—94.3 **51 Claims**



1. A method of searching for a best-first path from an originating computer ("node") through any number of intermediate node(s) to a destination node, when said nodes are connected in a cube-configured network having a plurality of path sections interconnecting the originating, intermediate and destination nodes, comprising the steps of:

trying individual path sections of the network in a preferred order of paths which lead from the originating to the destination node;

eliminating from the order of paths to be tried, those path sections terminating at a destination node and found busy; and

latching the first non-busy terminal path section of the preferred order which completes a path from the originating to said destination node.

5,008,883
COMMUNICATION SYSTEM

Alfons Eizenhöfer, Altdorf, and Georg Von Harten, Nürnberg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1989, Ser. No. 339,275

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1988, 3814355

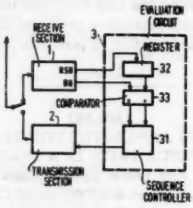
Int. Cl.[5] H04J *3/00*

U.S. Cl. 370—95.1 **15 Claims**

1. A communication system having at least one central arrangement and a plurality of mutually independent subscriber stations, in which a subscriber station, after transmission of a request for access, awaits an authorization for access to be granted by the central arrangement, characterized in that the subscriber station repeats its request for access, once it has established that another subscriber station, which transmitted its request for access at a later instant, has received an authorization for access,

wherein the subscriber station, when transmitting a request

for access, stores an identification code which indicates the time rank of its request for access in the order of the



requests for access, from further subscriber stations, occurring on a control channel.

5,008,884

PRIVATE AUTOMATIC BRANCH EXCHANGE SYSTEM WITH LINE ACCESSING NUMBER ADDING FEATURE

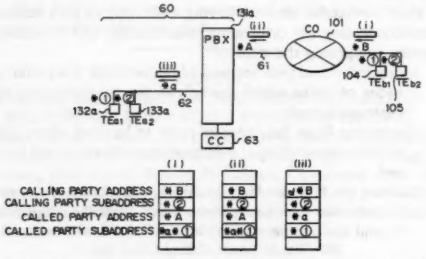
Shigehiko Yazawa; Toru Ogawa; Haruo Moritomo, all of Kawasaki; Yoshiaki Suya, Yokohama, and Mikio Nakayama, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 2, 1989, Ser. No. 346,544

Claims priority, application Japan, May 10, 1988, 63-111698; Sep. 12, 1988, 63-227904

Int. Cl.[5] H04J *3/02, 3/12, 3/08*

U.S. Cl. 370—110.1 **24 Claims**



1. A private automatic branch exchange system having an extension line connectable to an extension terminal and being operatively connected through a communication line and through a public network to a calling party terminal, comprising;

switching network means for switching between the communication line and the extension line;

control means, operatively connected to said switching network means, for controlling the switching operation of said switching network means, said control means comprising

line accessing number adding means for forming incoming information by adding a line accessing number to incoming call information so that the communication line is accessible by the extension terminal, and

means for transmitting said incoming information to the extension terminal; and

call back means cooperating with the extension terminal for performing a call back operation based on said line accessing number.

5,008,885

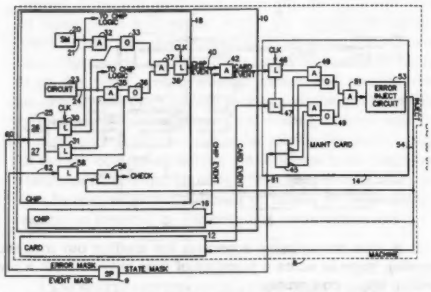
EVENT-CONTROLLED ERROR INJECTION SYSTEM

Kevin C. Huang, Endicott, N.Y.; Karl H. Kutz, Berlin; Timothy J. McNamara, Endicott, N.Y.; Victoria E. Seals, Alpharetta, Ga., and Gregory S. Still, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1988, Ser. No. 291,544

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—3 **10 Claims**



1. In a processing machine in which a plurality of machine events occur over time, a system for injecting simulated errors into said machine for test and evaluation of machine processes, comprising:

a programmable mask means in said machine for providing a masking signal identifying a mask-defined machine event;

a machine event detector in said machine for providing an event signal indicating a machine event;

comparison means connected to said programmable mask means and to said machine event detector for indicating the occurrence of said mask-defined machine state in response to said masking signal and said event signal;

count means connected to said comparison means for counting occurrences of said mask-defined machine event; and

programmable error injection means, connected to said count means, for injecting an error into said machine upon said count means reaching a certain count.

5,008,886

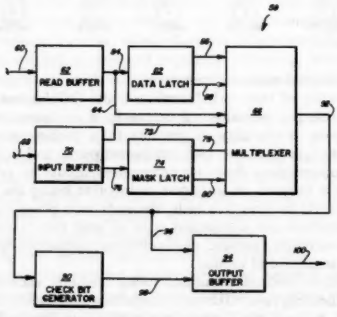
READ-MODIFY-WRITE OPERATION

Kumar Chinnaswamy, Milford; Michael A. Gagliardo, Shrewsbury; Paul M. Goodwin, Framingham; John J. Lynch, Wayland, and James E. Tessari, Arlington, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 27, 1989, Ser. No. 303,621

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—40.2 **16 Claims**



1. A method of merging read data from a digital computer

memory with new input data including mask field bits to modify said read data for rewriting into said memory, comprising the steps of:

latching a first selected number of data bits from said read data;

latching a second selected number of data bits from said new input data;

latching said mask field bits corresponding to said latched new input data bits;

multiplexing said latched read data bits with said latched new input data bits according to said latched mask field bits to form said first selected number of merged data bits;

generating a third selected number of check bits with said merged data bits according to an error correction code; and

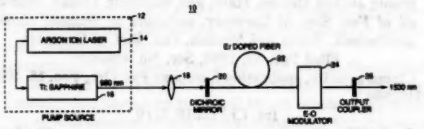
combining said merged data bits with said check bits to form modified write data.

5,008,887

MODE-LOCKED FIBER LASER

James D. Kafka, 928 Wright Ave. #302, Mountain View, Calif. 94043, and Thomas M. Baer, 537 Drucilla Dr., Mountain View, Calif. 94040

Filed Apr. 19, 1989, Ser. No. 340,448
Int. Cl.[5] H01S 3/30
U.S. Cl. 372—6 **41 Claims**



1. A mode-locked fiber laser, including:

a pump source,

a linear laser cavity including a single mode doped optical fiber, said cavity having a first end defined by an output coupler, said output coupler being partially transmissive at the laser output wavelength, and having a second end defined by a dichroic mirror having a high reflectivity at the laser output wavelength an a high transmissibility at the wavelength of radiation emitted from said pump source,

a broad bandwidth electro-optic modulator in said cavity,

means for coupling radiation from said pump source into said laser cavity, and

control means for operating said modulator such that its turn off and turn on times are shorter than 2 nanosecond and such that its repetition rate is Xc/2nL, where x is an integer from 1 to 1,000,000, C is the speed of light, n is the index of refraction of the fiber, and L is the total length of said optical fiber n is the index of fraction of the fiber, and L is the length of said optical fiber.

5,008,888

SEMICONDUCTOR LASER DRIVING APPARATUS

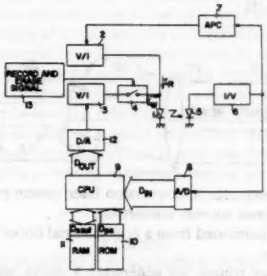
Tomiyuki Numata, Tenri; Takashi Iwaki, Nara; Kunio Kojima, Nara, and Toshihisa DeGuchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 21, 1989, Ser. No. 384,213
Claims priority, application Japan, Jul. 22, 1988, 63-184088
Int. Cl.[5] H01S 3/10
U.S. Cl. 372—29 **5 Claims**

1. In a semiconductor laser driving apparatus for supplying a driving current to a semiconductor laser device of an optical disk recording and reproducing system, the level of which is changed to adjust the optical output of the semiconductor laser device to one of plural levels corresponding to positions of an optical disk which is irradiated by a laser beam emitted from said laser device, said apparatus comprises:

a current supplying means for sequentially supplying plural reference driving currents having a different level to said laser device;

a monitoring means for detecting the optical output level of said laser device when each of said reference driving currents is supplied to said laser device;



a setting means for setting several optimum values on the basis of the detected optical output levels; and

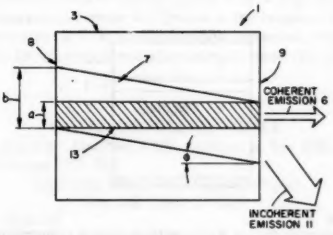
a selecting means for selecting one of said several optimum values, depending upon the irradiated position on the irradiated optical disk.

5,008,889

HIGH-ACCURACY WAVELENGTH STABILIZATION OF ANGLED-STRIPE SUPER LUMINESCENT LASER DIODE SOURCES

Keith E. Wilson, 1104 Hugh Reid Dr., Arcadia, Calif. 91007

Filed Nov. 6, 1989, Ser. No. 432,581
Int. Cl.[5] H01S 3/13
U.S. Cl. 372—32 **26 Claims**



1. An optical device comprising:

a superluminescent diode including means for simultaneously emitting both coherent light and incoherent light;

means for exciting said superluminescent diode into simultaneously emitting a beam of coherent light and a beam of incoherent light which can be spatially separated;

first means external to said diode for channeling light;

first means for coupling at least a portion of said beam of coherent light into said first means for channeling light;

second means external to said diode for channeling light; and

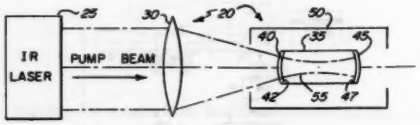
second means for coupling at least a portion of said beam of incoherent light into said second means for channeling light.

5,008,890

RED, GREEN, BLUE UPCONVERSION LASER PUMPED BY SINGLE WAVELENGTH INFRARED LASER SOURCE

Ross A. McFarlane, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 1, 1990, Ser. No. 517,085
Int. Cl.[5] H01S 3/16
U.S. Cl. 372—41 43 Claims



1. A red green blue upconversion laser system pumped by a single pump laser source, comprising:

a laser rod fabricated from a host material doped with a rare earth ion;

a pump laser source for generating a pump beam substantially at a single infrared pump wavelength;

a first upconversion laser mirror disposed adjacent a first end of the laser rod through which the pump beam passes into the laser rod, said first mirror characterized by high transmissivity at the pump beam wavelength and high reflectivity at the red, green and blue upconversion wavelengths; and

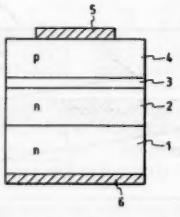
a second upconversion laser mirror mounted adjacent a second end of the laser rod and characterized by a transmissivity in the range of 1% to 10% at the red, green and blue upconversion wavelengths.

5,008,891

SEMICONDUCTOR LIGHT-EMITTING DEVICES

Yoshio Morita, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Apr. 10, 1990, Ser. No. 507,273
Claims priority, application Japan, Apr. 11, 1989, 1-91325
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—45 16 Claims



1. A semiconductor light-emitting device comprising a substrate and a combination of semiconductor laser layers disposed on said substrate in a double heterostructure laser configuration, said layers comprising:

a p-type semiconductor cladding layer formed of $Cu(Al_a Ga_{1-a})(S_b Se_{1-b})_2$ where $0 \leqq a \leqq 1$ and $0 \leqq b \leqq 1$;

an n-type semiconductor cladding layer formed of $(Zn_c Cd_{1-c})(S_d Se_{1-d})$, where $0 \leqq c \leqq 1$ and $0 \leqq d \leqq 1$; and

an activation layer disposed between said n-type cladding layer and p-type cladding layer and formed of $Cu(Al_a Ga_{1-a})(S_b Se_{1-b})_2$;

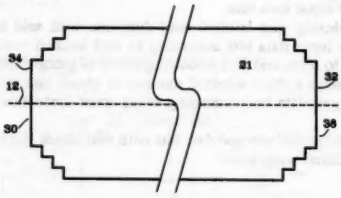
each of said p-type cladding layer, n-type cladding layer and activation layer having an identical value of lattice constant to that of said substrate.

5,008,892

SEMICONDUCTOR LASER DIODES

Barbara T. Landesman, Placitas, N. Mex., assignor to Talandic Research Corporation, Azusa, Calif.

Filed Dec. 27, 1989, Ser. No. 457,251
Int. Cl.[5] H01S 3/19, 3/08
U.S. Cl. 372—45 5 Claims



3. A semiconductor laser diode comprising:

a resonant semiconductor laser waveguide cavity: means for establishing lasing in the waveguide cavity; and

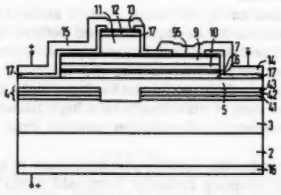
means for enhancing oblate-spheroidal lasing modes therein.

5,008,893

TUNABLE SEMICONDUCTOR LASER

Markus-Christian Amann, Munich; Gerhard Baumann, Ottobrunn; Jochen Heinen, Haar, and Wolfgang Thulke, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 15, 1990, Ser. No. 480,825
Claims priority, application European Pat. Off., Feb. 15, 1989, 89102596.7
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—50 29 Claims



1. A tunable semiconductor laser comprising a substrate upon which are arranged an active layer in which a laser cavity is formed, a tuning layer, and a first contact, a second contact, and a third contact, said active layer (6) and said tuning layer (9, 90) formed as a sandwich, a central layer (10) of semiconductor material which is a current conductor is grown between said active layer (6) and said tuning layer (9, 90), said central layer (10) has such a thickness and so high a doping concentration as to provide the required minimum charge carrier density and electrical conductivity for said central layer (10), a barrier layer (4) which is interrupted by a stripe-shaped region is provided for a lateral limitation of the current conduction to this stripe-shaped region; said tuning layer (9, 90) is arranged on said barrier layer (4) which faces away from said substrate, a first contact layer (95, 950) is applied onto said tuning layer (9, 90) and said first contact (14) is applied onto said first contact layer, a ridge waveguide (11, 12, 13) formed according to MCRW principle above said strip-shaped region, said ridge waveguide formed by a strip-shaped cladding layer (11), a second contact layer (12) which is applied thereon and by a contact strip (13) of metal which is applied onto said second contact layer, said second contact (15) applied onto said contact strip (13), said third contact (16) is situated on that side of said barrier layer (4) which is opposite to said second contact (15), said cladding layer (11) and said second contact layer (12) doped for a first electrical conductiv-

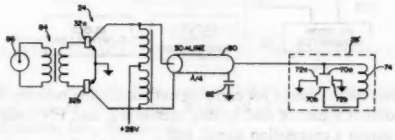
ity type, and said tuning layer (9, 90), said first contact layer (95, 950), said central layer (10) and at least layered portions of said barrier layer (4) are doped for a second opposite electrical conductivity type.

5,008,894

DRIVE SYSTEM FOR RF-EXCITED GAS LASERS

Peter Laakmann, Seattle, Wash., assignor to Synrad, Incorporated, Bothell, Wash.

Filed Mar. 30, 1990, Ser. No. 502,231
Int. Cl.[5] H01S *3/0975*
U.S. Cl. 372—38 19 Claims



1. An RF excited gas laser system, comprising:

a plasma tube for producing laser energy upon ignition of a gas contained within, said plasma tube having an electrical input port, a discharge section, an optical resonator and means for outcoupling laser energy from said plasma tube, the input terminal having a real impedance at a predetermined operating frequency;

a voltage source of RF energy having a source impedance much lower than the plasma tube impedance at the operating frequency; and

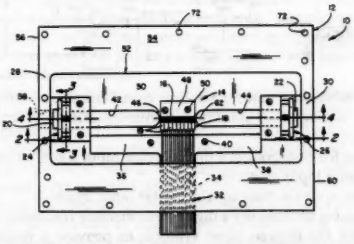
a transmission line connected at an input end to the voltage source and at an output end to the plasma tube, the transmission line having an electrical length substantially equal to an odd number of quarter wavelengths at the operating frequency and having a characteristic impedance intermediate the impedance of said voltage source and the impedance of said plasma tube.

5,008,895

PACKAGING DEVICE FOR DIODE LASER PUMPED ASSEMBLY

Danny W. Martin, St. Charles, Mo., assignor to Laser Diode, Inc., Earth City, Mo.

Filed Feb. 5, 1990, Ser. No. 475,232
Int. Cl.[5] H01S *3/09*
U.S. Cl. 372—69 17 Claims



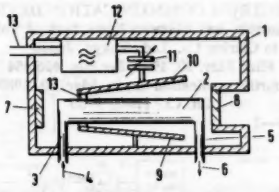
1. A package for a laser device, being arranged in a stack of similar packages and attached to a thermo-electric cooler comprising a base member of relatively planar heat conducting construction having an outer surface extending between spaced and opposed sides and end surfaces, an inner surface portion opposed to said outer surface and having a platform portion and a container extending therearound, said platform being formed thereon at a location intermediate the sides and end surfaces on which are positioned the elements of a laser including a laser medium and a laser pump source, laser mirrors including mountings therefor mounted on the base member and optically aligned with the laser medium, the laser medium including an elongated member mounted on said platform portion and having an optical axis intersecting the end surfaces at intermediate locations therealong, the pump source including an array of laser diodes positioned on the platform adjacent to one side of the laser medium, such that said diodes pump laser energy into the laser medium thereby causing said laser medium to lase, electrical connection means mounted in the base member including a strip line connector having a plurality of conductors for connection at corresponding ends to selected ones of said laser diodes in said array and to a source of energy for applying energy from said source to said laser diodes to cause them to lase, a closure member having a surface in abutting relation to said inner surface of the base member to enclose a space around the elements of the laser, and means for attaching said closure member to said base member thereby providing a compact, rugged heat conducting package.

5,008,896

GAS LASER HAVING A DISCHARGE TUBE THROUGH WHICH THE GAS FLOWS IN AN AXIAL DIRECTION

Hinrich Martinen, Quickborn; Karl-Heinz Knobbe, Ellerbek; Samuel S. Simonsson, Winsen-Bahlburg, and Peter Wirth, Winsen/Luhe, all of Fed. Rep. of Germany, assignors to Rofin-Sinar Laser GmbH, Hamburg, Fed. Rep. of Germany

Filed Apr. 10, 1987, Ser. No. 37,261
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1986, 8610693[U]
Int. Cl.[5] H01S *3/097*
U.S. Cl. 372—83 8 Claims



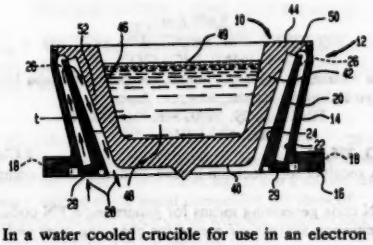
1. Gas laser having a discharge tube, through which the gas flows in an axial direction and to which highfrequency electrodes are fitted externally, and having a high-frequency generator, characterized in that the power output stage (12) of the high-frequency generator is disposed in the housing (1) of the laser resonator (2, 7, 8) and is directly connected to the electrodes (9, 10) via impedance adaptation elements (11, 14 to 18).

5,008,897

WATER COOLED CRUCIBLE

Gary B. Crumley, Oakland, Calif., assignor to The BOC Group, Inc., Murray Hill, N.J.

Filed Mar. 23, 1990, Ser. No. 498,869
Int. Cl.[5] H01J *37/305*
U.S. Cl. 373—11 5 Claims



1. In a water cooled crucible for use in an electron beam

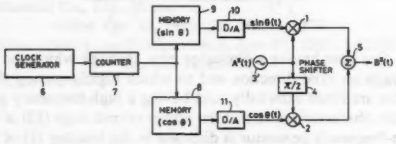
evaporation system to contain a material to be melted and evaporated, the water cooled crucible including: a base wall; a sidewall upstanding from the base wall; a rim formed at the top of the sidewall; and a pocket laterally defined by the sidewall and at the top and bottom by the rim and the base wall, respectively; the material contained within the pocket and having, a top surface spaced below the rim, a high thermal conductivity, and a capability of alloying with the sidewall when melted and evaporated; and the electron beam evaporation system including, means for generating an electron beam for melting and evaporating the material at the top surface of the material, the electron beam generating heat at the top surface of the material, conducted through the material to the sidewall, and a crucible support element to receive the crucible and having an inner surface surrounding the sidewall and outwardly spaced therefrom to form an annular passageway for receiving cooling water in a direction taken from the rim to the base wall for cooling the crucible by transferring the heat from the sidewall to the cooling water; the improvement comprising: the sidewall including a region extending from the rim to a location of the sidewall situated beneath the top surface of the material; the sidewall, within the region, having a thickness such that the sidewall contacts the inner surface of the crucible support element, and a plurality of circumferentially spaced grooves defined in the outer surface of the sidewall for allowing passage of the cooling water and configured to increase the heat transfer between the sidewall and the cooling water and thus, the cooling of the sidewall to prevent the material from alloying with the sidewall.

5,008,898

CARRIER MODULATING DEVICE FOR A SPREAD SPECTRUM COMMUNICATION DEVICE

Mashiro Hamatsu, and Mamoru Endo, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1990, Ser. No. 496,354
Claims priority, application Japan, Mar. 30, 1989, 1-76789
Int. Cl.[5] H04L *9/00*
U.S. Cl. 375—1 **7 Claims**



1. A spread spectrum modulating device comprising:
means for generating first and second carrier signals, which are orthogonal to each other;
first multiplying means for multiplying a first analog signal corresponding to a real component of a square phase sequence by said first carrier signal;
second multiplying means for multiplying a second analog signal corresponding to an imaginary component of the square phase sequence by said second carrier signal; and
means for adding the outputs of said first and said second multiplying means to each other.

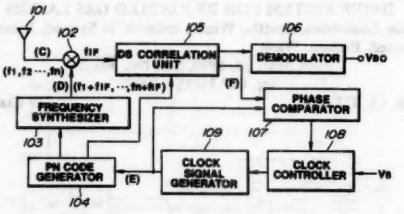
5,008,899

RECEIVER FOR SPECTRUM SPREAD COMMUNICATION

Michio Yamamoto, Mobara, Japan, assignor to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan

Filed Jun. 29, 1990, Ser. No. 545,642
Int. Cl.[5] H04K *1/04*
U.S. Cl. 375—1 **2 Claims**

1. A receiver for spectrum spread communication comprising:
a PN code generating means for generating a PN code;
a frequency synthesizer means for changing over and outputting signals different in frequency in turn in response to said PN code;
a mixing means for carrying out multiplication between a signal received by the receiver and the signal form said frequency synthesizer means to generate its output signal;



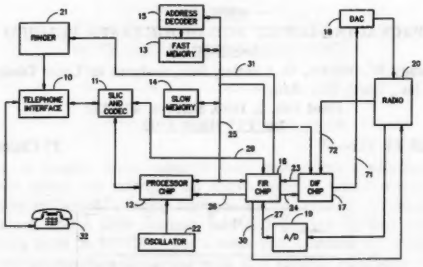
a correlation means for carrying out correlation between the output signal of said mixing means and said PN code to output a correlation signal; and
a control means for controlling the frequency of said PN code generating means in response to said correlation signal.

5,008,900

SUBSCRIBER UNIT FOR WIRELESS DIGITAL SUBSCRIBER COMMUNICATION SYSTEM

David N. Critchlow; Moshe Yehushua; Graham M. Avis, all of San Diego; Wade L. Heimbigner, Poway; Karle J. Johnson, Carlsbad, and George A. Wiley, San Diego, all of Calif., assignors to International Mobile Machines Corporation, King of Prussia, Pa.

Filed Aug. 14, 1989, Ser. No. 394,497
Int. Cl.[5] H04B *1/38*
U.S. Cl. 375—8 **8 Claims**



1. A subscriber unit for wireless communication with a base station in a wireless subscriber communication system, comprising:
means for transcoding a digital voice input signal to provide digital input symbols;
means for FIR filtering the digital input symbols;
means for modulating a digital intermediate frequency signal with the filtered input symbols to provide a modulated intermediate frequency input signal;
means for processing the modulated input signal for transmission to the base station;
means for demodulating an output signal received from the base station to provide digital output symbols; and
means for synthesizing a digital voice output signal from the digital output symbols;
wherein the subscriber unit includes
a FIR chip for performing said FIR filtering of the digital input symbols;
a DIF chip for digitally synthesizing said digital intermedi-

ate frequency signal and for performing said modulation of said digital intermediate frequency signal; and

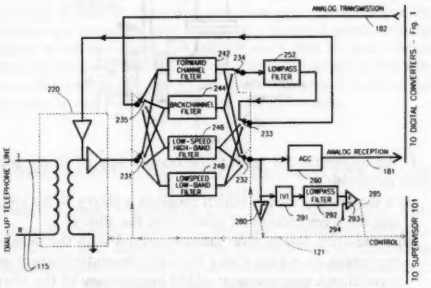
a single processor chip for performing said transcoding of said digital voice input signal, for performing said demodulation of said output signal received from the base station, and for performing said synthesizing of the digital output symbols;

said DIF chip including means coupled to said processor chip for accumulating phase data provided by said processor chip to indicate a predetermined intermediate frequency and means for processing the accumulated phase data to generate said digital intermediate frequency signal at the predetermined intermediate frequency.

5,008,901
ASYMMETRICAL DUPLEX ERROR-CONTROLLED MODEM

Clifford H. Wallach, Lincolnshire; Robert C. Suffern, Chicago, and Dale M. Walsh, Burr Ridge, all of Ill., assignors to U.S. Robotics, Inc., Skokie, Ill.

Filed Oct. 29, 1987, Ser. No. 115,354
Int. Cl.[5] H04L 5/14
U.S. Cl. 375—8 **5 Claims**



1. A modem for connecting digital data terminal equipment to an analog communication link comprising, in combination,

frequency division filtering means serially connected with said link for establishing a high speed channel having a bandwidth in a first range of frequencies and a low speed channel having a bandwidth in a second and more limited range of frequencies,

digital-to-analog conversion means connected between said equipment and said filtering means for translating digital signals from said equipment into analog signals for transmission over said link in a selected one of said high or low speed channels,

analog-to-digital conversion means connected between said equipment and said filtering means for producing digital signals supplied to said equipment from the analog signals received over the other one of said channels, and

means operative when said digital-to-analog conversion means is transmitting data over said low speed channel for sending a channel reversal command over said link whenever the amount of data awaiting transmission over said low speed channel exceeds a predetermined amount.

5,008,902
AUTOMATIC BAUD RATE DETECTION

Gary R. Key, Round Rock, and David C. Black, Austin, both of Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jan. 25, 1989, Ser. No. 302,172
Int. Cl.[5] H04B 3/46
U.S. Cl. 375—10 **6 Claims**

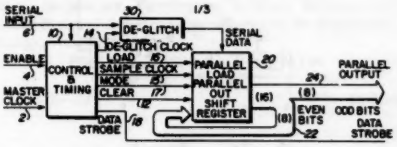
1. Method for automatically detecting transmission rate of a stream of data, comprising:

(a) sampling the data at a rate faster than the highest possible baud rate;

(b) storing the sampled data in a memory;

(c) comparing the sampled data to known data;

(d) determining if a match occurs;



(e) selecting the matched baud rate if a match occurs;

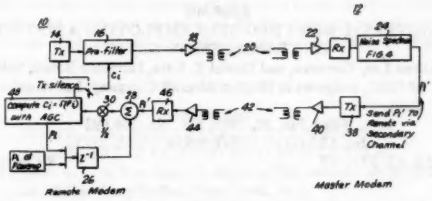
(f) recirculating a portion of the sampled data if a match does not occur; and

(g) repeating steps (a) to (f) until a match occurs.

5,008,903
ADAPTIVE TRANSMIT PRE-EMPHASIS FOR DIGITAL MODEM COMPUTED FROM NOISE SPECTRUM

William L. Betts, St. Petersburg, and James J. DesRosiers, Tampa, both of Fla., assignors to A.T. & T. Paradyne, Largo, Fla.

Filed May 25, 1989, Ser. No. 357,056
Int. Cl.[5] H04L 7/00
U.S. Cl. 375—60 **21 Claims**



1. An apparatus for calculating pre-emphasis coefficients for a transmitting modem in a communications system, including:

first transmitting means in the transmitting modem, including adjusting means responsive to the pre-emphasis coefficients for adjusting frequency-dependent characteristics of an output of said first transmitting means;

receiving means for receiving said output from said first transmitting means;

generating means for generating parameters responsive to a noise spectrum of said output including means for calculating said noise spectrum of said output;

second transmitting means for transmitting said parameters to the transmitting modem, and

computing means for computing the pre-emphasis coefficients from said parameters.

5,008,904
SYNCHRONIZER USING CLOCK PHASE EXTRAPOLATION

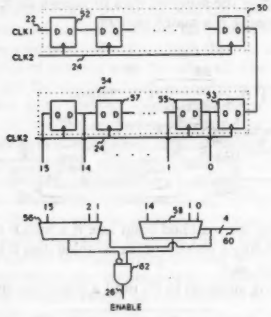
Steven T. Mangelsdorf, Fort Collins, Colo., and David V. James, Palo Alto, Calif., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Jul. 24, 1989, Ser. No. 384,588
Int. Cl.[5] H03M 9/00
U.S. Cl. 375—107 **20 Claims**

19. A process for synchronizing data transfers between a first data bus having a first clock signal and a second data bus having a second clock signal comprising the steps of:

sampling said first clock signal with said second clock signal and providing a serial sampled output;

converting said serial sampled output to parallel signals, selecting at least two adjacent parallel signals; ANDing



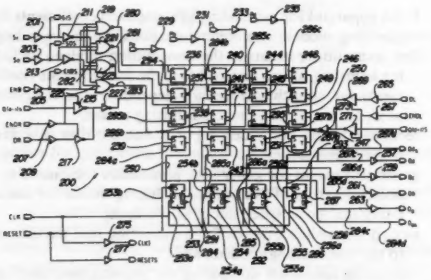
said selected signals to produce an enable signal; and enabling a bus driver circuit connecting said first data bus to said second data bus with said enable signal.

5,008,905

UNIVERSAL SHIFT REGISTER EMPLOYING A MATRIX OF TRANSMISSION GATES

Alfred Lee, Torrance, and Daniel T. Kain, Hermosa Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 20, 1988, Ser. No. 208,692
Int. Cl.[5] G11C *19/00*; H03K *21/02, 23/50*
U.S. Cl. 377—77 **9 Claims**



1. A universal shift register having a plurality M of selectable operating modes where M is an integer, the shift register comprising:

a plurality N of bistable storage devices where N is an integer, one for each stage of the shift register;

means for indicating any one of the M selectable operating modes for the shift register; and

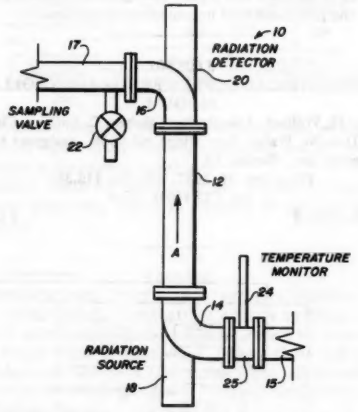
an N column-by-M row matrix of information transmission gates coupled to the indicating means and to the N bistable storage devices, each of the M rows of the matrix arranged to perform one of the selectable register operating modes upon each of the N register stages, whereby register stage data pass through only a single information transmission gate of the matrix while being manipulated between a shift register input and a predetermined shift register stage.

5,008,906

CONSISTENCY MEASURING DEVICE FOR A SLURRY CONTAINING DEFOAMER

David P. Reichwein, Hershey, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 252,067, Oct. 3, 1988, abandoned. This application Sep. 8, 1989, Ser. No. 404,620
Int. Cl.[5] G01N *23/14*
U.S. Cl. 378—54 **3 Claims**



1. An apparatus for testing the consistency of slurry solutions comprising:

(a) a deaerating means which receives a slurry to be tested and removes entrapped gases from the slurry;

(b) a radiation test section interconnected with the deaerating means, receiving slurry from the deaerating means and providing a measurement of the consistency of the slurry by measuring the attenuation of radiation which occurs when radiation is passed through a prescribed path through a portion of the slurry;

(c) the radiation test section comprises:

(1) a straight section of pipe with the total amount of slurry flowing therethrough;

(2) a first pipe elbow attached to one end of the straight section of pipe;

(3) a radiation source attached to the first pipe elbow so that the radiation from the radiation source is essentially aligned with the axis of the straight section of pipe;

(4) a second pipe elbow attached to the second end of the straight section of pipe; and

(5) a radiation detector attached to the second pipe elbow so that the radiation detector is affected by the radiation from the radiation source, and the radiation received by the radiation detector is affected by the consistency of the slurry as measured in the total flow of the slurry and not a sample of the slurry;

(d) the deaerating means comprimises:

(1) a container into which the slurry is fed;

(2) supply means to furnish a controlled quantity of defoaming agent into the container; and

(3) mixing means which assures that the defoaming agent acts upon the slurry before the slurry is supplied to the radiation test section; and

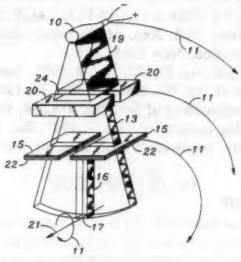
(e) including control means interconnected with the radiation test section and the supply means and acting to determine the rate of supply of defoaming agent to the deaerating means based upon the consistency reading derived from the radiation test section.

5,008,907

THERAPY X-RAY SCANNER

Amos Norman, Woodland Hills, and Keisuke S. Iwamoto, Monterey Park, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 31, 1989, Ser. No. 359,159
Int. Cl.[5] A61N 5/10
U.S. Cl. 378—65 40 Claims



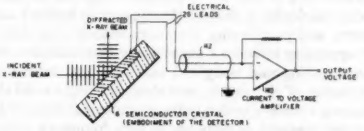
1. Apparatus for delivering a therapy dose of x-rays to a subject comprising means to move an orthovoltage range x-ray source mounted on a computed tomographic scanning unit including a source, detector, and data processing means for displaying a cross-sectional image of a selected portion of the subject in an arc about the subject such that an x-ray beam from the source is isocentered on a selected target in the subject, and means for directing the beam as a pencil beam to the isocenter in the subject to deliver therapy x-rays.

5,008,908

DIFFRACTION DEVICE WHICH DETECTS THE BRAGG CONDITION

Terrence J. Jach, Washington, D.C.; Jon C. Geist, Olney, Md.; Gary P. Carver, Ijamsville, Md., and Donald B. Novotny, Bethesda, Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Dec. 9, 1988, Ser. No. 282,243
Int. Cl.[5] G01N 23/20
U.S. Cl. 378—70 12 Claims



1. A diffraction device comprising:

(a) a semiconductor crystal having a plurality of crystal planes for diffracting incident radiation at the Bragg angle,

(b) a semiconductor detector region, integrated into said crystal and having a depletion region located at a depth below a surface of said semiconductor crystal such that current in a said semiconductor detector region due to said incident radiation incident on said surface of the crystal decreases significantly when said crystal is oriented at the Bragg angle with respect to the incident radiation,

(c) said semiconductor detector region producing said current by collecting electron-hole pairs in said depletion region, but not significantly collecting electron-hole pairs in a region closer to said surface than depletion region,

(d) said depletion region located deeper in said crystal than the extinction length of the incident radiation at the Bragg angle, but less than the extinction length of the incident radiation at angles other than the Bragg angle, and

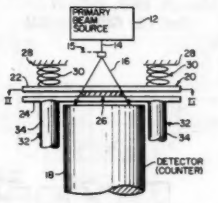
(e) electrodes connected to said semiconductor detector region, said electrodes providing an electrical signal indicative of diffraction at the Bragg angle.

5,008,909

DIFFRACTOMETER DATA COLLECTING METHOD AND APPARATUS

Peter A. Steinmeyer, Farmington, N. Mex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Feb. 7, 1990, Ser. No. 476,184
Int. Cl.[5] G01N 23/20
U.S. Cl. 378—71 16 Claims



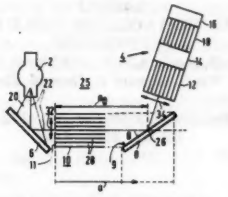
1. In a diffractometer comprising means for producing a primary beam, a sample holder for suspending a sample in the path of the primary beam, and a detector means for detecting a diffracted beam produced when the primary beam strikes the sample, the improvement comprising scanning means disposed at a fixed location between said holder and said detector means for varying the total amount of the cross sectional area of the diffracted team that is received by the detector means in a manner such that the diffracted beam is detected in an integrated form.

5,008,910

X-RAY ANALYSIS APPARATUS COMPRISING A SAGGITALLY CURVED ANALYSIS CRYSTAL

Walterus A. L. A. Van Egeraat, Almelo, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 158,446, Feb. 22, 1988, abandoned. This application Jan. 29, 1990, Ser. No. 474,320
Claims priority, application Netherlands, Feb. 27, 1987, 8700488
Int. Cl.[5] G01T 1/36; G21K 23/201, 1/06; G01N 23/223
U.S. Cl. 378—84 3 Claims



1. An x-ray analysis apparatus comprising in order an x-ray source passing an x-ray beam; a sample reflecting said x-ray beam; at least a primary soller slit collimator collimating said x-ray beam from said sample; a curved analysis crystal receiving said x-ray beam from said collimator, said analysis crystal being substantially circular-cylindrical in a saggital direction transverse to a plane extending through an incident x-ray beam to said analysis crystal and a normal to said analysis crystal, and said analysis crystal producing a diffracted x-ray beam, said circular-cylindrical analysis crystal having a radius of curvature R substantially equivalent to a distance between an entrance side of said primary soller slit collimator and a point of incidence of said incident x-ray beam on a surface of said

analysis crystal divided by sin θ, where θ is an angle of incidence of said incident x-ray beam on said analysis crystal; and an x-ray detector receiving said diffracted x-ray beam and having at least one further collimator.

5,008,911

X-RAY QUANTA MEASURING DEVICE INCLUDING DIAPHRAGM FOR PRODUCING CONICAL RADIATION BEAM ON OBJECT BEING MEASURED

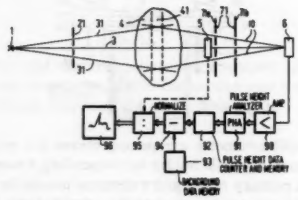
Geoffrey Harding, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 22, 1989, Ser. No. 411,357

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1988, 3842146; Mar. 21, 1989, 3909147

Int. Cl.[5] G01N *23/201*

U.S. Cl. 378—86 17 Claims



1. A device for measuring the pulse transfer spectrum of X-ray quanta which are elastically scattered in an examination zone of an X-ray system comprising a polychromatic x-ray source on one side of the examination zone, said measuring device comprising:

a detector on the other side of the zone for measuring the energy of the X-ray quanta; and

two apertured diaphragms which have a common symmetry axis and which transmit scattered radiation to the detector only within a given scattering angle range, a first diaphragm being between the examination zone and the X-ray source and a second diaphragm between the examination zone and the detector, the first diaphragm being constructed so that the X-rays transmitted therethrough form a conical envelope of a primary radiation cone, the second diaphragm being constructed so that scattered radiation produced in the examination zone is incident on the detector in an annular symmetrical fashion with respect to said axis of symmetry.

5,008,912

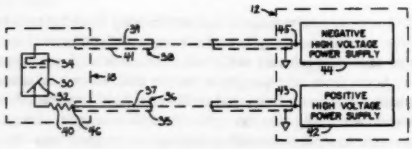
X-RAY TUBE HIGH VOLTAGE CABLE TRANSIENT SUPPRESSION

George A. Farrall, Rexford, N.Y., and Steven D. Hansen, Port Washington, Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Oct. 5, 1989, Ser. No. 417,353

Int. Cl.[5] H05G *1/08*

U.S. Cl. 378—91 14 Claims



1. An X-ray imaging system comprising:

a vacuum tube for emitting an X-ray beam and having an anode and a cathode;

means, having first and second terminals, for producing a DC potential across the terminals;

a cable means for applying the DC potential from said means for producing to said vacuum tube, said cable means having a characteristic impedance and storing electrical energy as a result of applying the DC potential; and

a resistive means, coupling said cable means to said vacuum tube, for depressing transient currents flowing through said vacuum tube under a breakdown condition.

5,008,913

MEASURING AND DAMPING RESISTOR ARRANGEMENT FOR A HIGH-VOLTAGE APPARATUS

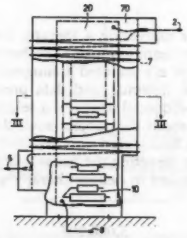
Hans Negle, Nahe, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 37,122, Apr. 9, 1987, abandoned, which is a continuation of Ser. No. 880,335, Jun. 24, 1986, abandoned, which is a continuation of Ser. No. 578,250, Feb. 7, 1984, abandoned. This application Oct. 7, 1987, Ser. No. 107,872

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1983, 3304316

Int. Cl.[5] H05G *1/10*

U.S. Cl. 378—105 13 Claims



1. A high-voltage apparatus, comprising

a voltage source having an output which is at a high voltage with respect to ground;

a terminal which is at a high voltage with respect to ground during normal operation of the apparatus;

a damping resistor connecting said source output to said terminal for conducting and limiting current to a load connected to said terminal; and

a measuring resistor arrangement connected to a point between the damping resistor and the terminal,

characterized in that the apparatus comprises an insulating body enclosing a part of the measuring resistor arrangement, said part having stray capacitance to ground,

said apparatus includes a capacitance neutralization element surrounding said body and said part, and extending in a direction of elongation, said element being a solid element having a surface with a voltage gradient along said surface of said element; in response to high frequency voltages at said terminal, said voltage gradient having a high frequency component in said direction of elongation for neutralizing effects of said stray capacitance, and

the damping resistor comprises a resistance wire wound around said body, said resistance wire being said solid element, arranged so as to surround at least a portion of said arrangement adjacent said point, and to shield at least part of the measuring resistor arrangement so as to reduce the effect of stray capacitances from said arrangement to ground.

5,008,914

QUANTITATIVE IMAGING EMPLOYING SCANNING EQUALIZATION RADIOGRAPHY

William E. Moore, Macedon, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 30, 1989, Ser. No. 358,239

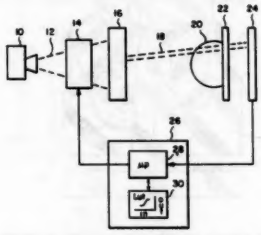
Int. Cl.[5] H05G *1/44*

U.S. Cl. 378—108 10 Claims

1. An improved scanning equalization radiography system of

the type having a means for scanning a beam of radiation over an object to expose a sensor for forming an image of the object, the sensor having an exposure response function;

a detector for monitoring the intensity of the beam after passing through the object to produce a feedback signal; and



control means responsive to the feedback signal to control the exposure produced by the scanning beam according to a control function, wherein the improvement comprises;

the control function having the same general shapes and slopes as the exposure response function of the sensor.

5,008,915

METHODS FOR FORMING A RADIOGRAPH USING SLIT RADIOGRAPHY

Hugo Vlasbloem, Maasland, Netherlands, assignor to B.V. Optische Industrie "De Oude Delft", Delft, Netherlands

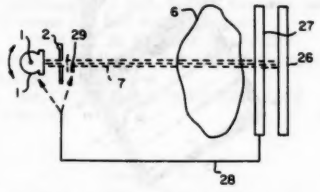
Continuation-in-part of Ser. No. 648,707, Sep. 7, 1984, Pat. No. 4,803,714. This application Feb. 3, 1989, Ser. No. 306,348

Claims priority, application Netherlands, Sep. 13, 1983, 8303156

The portion of the term of this patent subsequent to Dec. 22, 2004, has been disclaimed.

Int. Cl.[5] G01N *23/04*

U.S. Cl. 378—108 **4 Claims**



1. A method for forming a radiograph of an object, which comprises the steps of:

(a) energizing an X-ray source to a first level of radiation intensity, said X-ray source including a slit diaphragm;

(b) effecting a first scanning of said object by an X-ray beam from said X-ray source;

(c) generating output signals of radiation intensity from an elongated X-ray detector during said first scanning;

(d) measuring said output signals during at least a portion of said first scanning;

(e) energizing said X-ray beam to a higher level of radiation intensity as determined by step (d) for forming a radiograph of said object;

(f) effecting a second scanning of said object with an X-ray beam from said X-ray source at said higher level of radiation intensity;

(g) modulating said X-ray beam during said second scanning; and

(h) forming said radiograph during said second scanning.

5,008,916

SAFETY DEVICE FOR RADIOGENIC UNIT

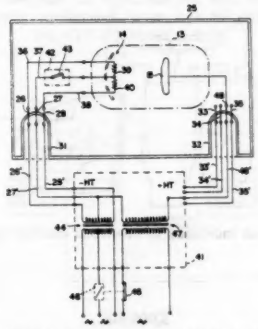
Jacques Le Guen, Paris, France, assignor to General Electric CGR S.A., Issy Les Moulineaux, France

Filed May 10, 1990, Ser. No. 521,700

Claims priority, application France, May 10, 1989, 8906095

Int. Cl.[5] H05G *1/54*

U.S. Cl. 378—118 **6 Claims**



1. A safety device for a radiogenic unit of a radiology instrument comprising an X-ray tube enclosed in a casing filled with a cooling liquid, said tube having an anode and a cathode connected to a voltage generator, said cathode comprising at least one filament connected to an electrical power supply circuit, wherein it includes at least one temperature-sensitive or pressure-sensitive device which is placed within the casing and a switch, also placed within the casing, which is series connected in the power supply circuit of the cathode filament and controlled by said at least one temperature sensitive and pressure-sensitive device so that the supply of the electrical power to the filament is cut off when the temperature or the pressure goes beyond a pre-determined threshold.

5,008,917

X-RAY TUBE WITH AN ELECTRON SHIELDING RIDGE ON THE CATHODE

Rolf Behling, Norderstedt, and Wolfgang Köster, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 6, 1989, Ser. No. 433,060

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1988, 3838539

Int. Cl.[5] H01J *35/06, 5/18*

U.S. Cl. 378—140 **5 Claims**

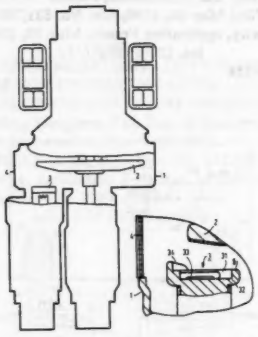
1. An X-ray tube construction comprising:

an evacuated metal envelope, said envelope including a radiation exit window; and

an anode and cathode in the envelope in spaced relation at respective positive and negative voltages for generating X-rays;

said cathode comprising a filament located in a recess in the cathode, said cathode having a rim defining the recess, said rim extending toward said anode in a given axial direction, said window being positioned transverse said axial direction adjacent to said cathode, said cathode emitting electrons toward said anode, said cathode including a ridge segment extending partially about said filament, said segment being on said rim at a region between

said filament and said window and extending in the axial direction an amount sufficient for shielding the window



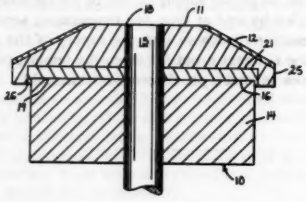
from direct incidence of electrons emitted by said cathode.

5,008,918

BONDING MATERIALS AND PROCESS FOR ANODE TARGET IN AN X-RAY TUBE

David S. Lee, Brookfield, and Thomas C. Tiearney, Jr., Waukesha, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 13, 1989, Ser. No. 434,159
Int. Cl.[5] H01J *35/10*; B23K *31/02*
U.S. Cl. 378—144 **10 Claims**



1. In a composite structure wherein a refractory metal portion is bonded to a graphite portion with a bonding layer the improvement wherein:

the bonding layer comprises platinum and a bonding agent selected from the group consisting of tungsten, nickel, molybdenum, vanadium, and titanium.

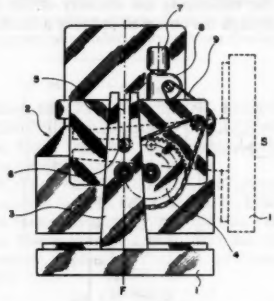
5,008,919

X-RAY FILM CHANGER POSITIONING DEVICE

Aldona A. Siczek, and Bernard W. Siczek, both of 1252 Chinook Way, Boulder, Colo. 80303

Continuation of Ser. No. 398,834, Aug. 25, 1989. This application May 29, 1990, Ser. No. 529,551
Int. Cl.[5] G03B *42/02*
U.S. Cl. 378—173 **1 Claim**

1. In an X-ray imaging apparatus which apparatus includes an image intensifier and a film changer, a film changer positioning device comprising at least one supporting member supporting said film changer and extending therefrom, said supporting member secured to said image intensifier by a rotary member in a pivoting relationship about an axis parallel to, and offset from, an axis of rotation of said rotary member and including a linear guide disposed at one extremity thereof opposite to said film changer, which linear guide is engaged by a stationary post, whereby rotation of said rotary member changes position of said film changer from one position offset from the axis of



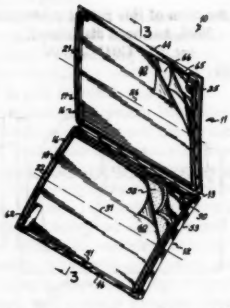
rotation of the rotary member to another position offset from said axis of rotation.

5,008,920

X-RAY FILM CASSETTE WITH FLEXIBLE GRID BONDED TO PRESTRESSED COVER

Ronald P. Gralak, Cincinnati, Ohio, assignor to Liebel-Flarsheim Company, Cincinnati, Ohio

Filed Nov. 27, 1989, Ser. No. 441,180
Int. Cl.[5] G03B *42/04*; G21K *1/00*
U.S. Cl. 378—185 **22 Claims**



1. A cassette for housing a sheet of x-ray film, said cassette comprising:

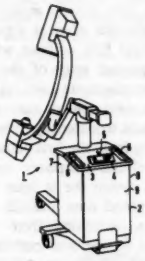
a front cover and a rear cover selectively matable with said front cover to close the cassette and separable therefrom to open the cassette, each of said covers including an exterior surface and an interior surface, the interior surfaces being mutually opposed one another when said cassette is closed, at least said front cover being prestressed to arch resiliently inwardly about a predetermined axis to a first limit of deflection when the cassette is open and to progressively resiliently flatten to a second limit of deflection when the cassette is fully closed; an anti-scatter grid bonded to said interior surface of said front cover to arch and flatten congruently therewith, said first and second limits of deflection of said cover lying in a range within which said grid can deflect without sustaining damage, the progressive flattening of said grid facilitating the purging of air pockets away from the surface of the film as the cassette is closed.

5,008,921

PORTABLE X-RAY DIAGNOSTICS APPARATUS WITH POSITION-ADJUSTABLE CONTROL PANEL

Karlheinz Kaul, and Hans-Christian Bock, both of Uttenreuth, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 25, 1989, Ser. No. 411,737
Claims priority, application European Pat. Off., Oct. 11, 1988, 88116873.6
Int. Cl.[5] H05G 1/02
U.S. Cl. 378—198 5 Claims



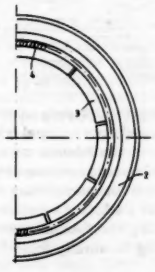
1. A mobile x-ray diagnostics apparatus comprising:
an x-ray source and an x-ray detector and means for supporting said x-ray source and x-ray detector;
a freely moveable base having a front portion to which said means for supporting is attached, and having a rear and left and right sides and a top surface;
a control panel for operating said apparatus; and
a plurality of mounting locations disposed on said upper surface of said base for releasably holding said control panel in place on said upper surface substantially parallel to a selected one of said right side, said left side or said rear of said base so that an operator can operate said apparatus via said control panel while standing adjacent said base.

5,008,922

SAMPLE CASSETTE

Herbert Beltrop, Hamm, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Fed. Rep. of Germany

Filed Oct. 26, 1989, Ser. No. 427,295
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1988, 8813765[U]
Int. Cl.[5] H05G 1/00, 1/02; G03B 42/02
U.S. Cl. 378—208 11 Claims



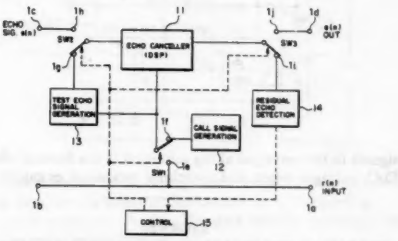
1. A cassette for a material sample, said cassette comprising a housing for supporting the sample; and retaining means fore retaining the sample in the cassette housing, said retaining means including a plurality of segments adapted to enclose the sample when the said sample is in said housing, said segments being movable relative to said housing toward clamping engagement with said sample, biasing means encircling said segments for biasing them in a direction toward engagment with the sample, and a cover supported by said cassette housing.

5,008,923

TESTABLE ECHO CANCELLING METHOD AND DEVICE

Youichi Kitamura, and Michiko Tajimi, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 17, 1990, Ser. No. 509,797
Claims priority, application Japan, Apr. 19, 1989, 1-097597
Int. Cl.[5] H04M 1/24, 9/08
U.S. Cl. 379—3 13 Claims



1. A testable echo canceller comprising an input and an output terminals for a far-end talker signal, an input and an output terminals for near-end talker signal a memory for storing said input far-end talker signal, a tap coefficient memory for storing a tap coefficient of an echo estimator, the echo estimating means for generating a pseudo echo signal based on the contents of said far-end talker signal memory and said tap coefficient memory, a subtracter means for subtracting said psuedo echo signal from an echo signal passed through an echo path for producing a residual echo signal, a tap coefficient updating means for serially updating said tap coefficient based on said far-end talker signal and said residual echo signal, a test far-end talker signal generating means for generating a far-end talker signal used for the test, a test echo signal generating means for generating a test echo signal with a simulated echo path, a residual echo detector having an output terminal connected to said subtracter means and for detecting a residual echo signal, and a control means for controlling formation of a path for an input and output signal passed to the echo canceller and formation of a testing circuit for making sure of the function with the echo canceller itself.

5,008,924

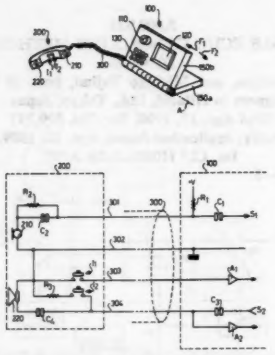
TELECOMMUNICATIONS TERMINAL WITH IMPROVED CONTROL FUNCTIONS

Jacques Guichard; Georges Buchner, both of Paris, and Jacques Labat, Chatillon, all of France, assignors to Etat Francais, Issy les Moulineaux, France

Filed Jul. 24, 1989, Ser. No. 384,495
Claims priority, application France, Jul. 25, 1988, 88 10003
Int. Cl.[5] H04N 7/12; H04M 1/72
U.S. Cl. 379—53 5 Claims

1. A telecommunications terminal of the video phone type comprising a central unit (100) and a handset (200) comprising a microphone (210) and a speaker (220) connected to said central unit via a cord (300) having a plurality of wires (301-304) for conveying output signals from said microphone and input signals to said speaker, said terminal further comprising a camera (110) and a display means (120), said terminal being characterized in that a switching means (1, 2, 230) housed in said handset (200) and in communication with said wires controls forward and reverse motion of a motor for driving a moving portion (150b) of said central unit, said mov-

ing portion carrying said camera, thereby enabling an image of the user to be framed, said switching means causing control



signals to be conveyed along said cord in the form of phantom D.C. voltages when said switching means are engaged.

5,008,925

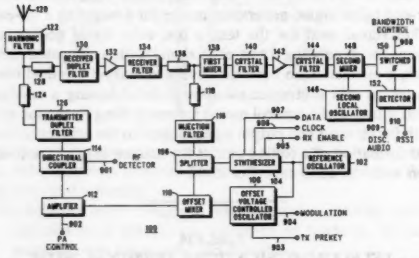
CELLULAR TELEPHONE RESPONSIVE TO SERVICE AVAILABILITY FOR OPERATING ON DIFFERENT CELLULAR TELEPHONE SYSTEMS

Ali Pireh, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 453,553, Dec. 20, 1989, which is a continuation of Ser. No. 370,675, Jun. 23, 1989, abandoned. This application Apr. 20, 1990, Ser. No. 511,882

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—60 **18 Claims**



1. A cellular telephone communicating cellular telephone calls on at least first and second cellular telephone systems each having different cellular radio channels, operation in said first cellular telephone system being preferred over operation in said second cellular telephone system, said cellular telephone comprising:

antenna means for receiving and transmitting cellular telephone call signals on said cellular radio channels;

dialing means for dialing digits of telephone numbers;

cellular transmitting means coupled to the antenna means for transmitting cellular telephone call signals on the cellular radio channels of the first and second cellular telephone systems;

cellular receiving means coupled to the antenna means for receiving cellular telephone call signals on the cellular radio channels of the first and second cellular telephone systems, said cellular receiving means further including intermediate frequency means having first filtering means having a first predetermined bandwidth, second filtering means having a second predetermined bandwidth that has a magnitude less than that of the first predetermined bandwidth, and switching means responsive to a bandwidth control signal having first and second states for switching between the first and second filtering means, respectively; and

control means including memory means for storing first and second control programs, said control means being coupled to the dialing means, cellular transmitting means, and cellular receiving means for automatically transmitting and receiving cellular telephone calls on the first cellular telephone system using the first control program and on the second cellular telephone system using the second control program, said control means generating the first state of the bandwidth control signal for cellular telephone calls on said first cellular telephone system and generating the second state of the bandwidth control signal for cellular telephone calls on said second cellular telephone system, said control means monitoring the cellular radio channels to detect the absence of cellular service and switching from the first cellular telephone system to the second cellular telephone system when cellular service has been absent for at least two non-contiguous second predetermined time intevals in said first cellular telephone system, switching from the second cellular telephone system to the first cellular telephone system when cellular service has been absent for a first predetermined time interval in said second cellular telephone system or when a third predetermined time interval has elapsed since switching to said second cellular telephone system.

5,008,926

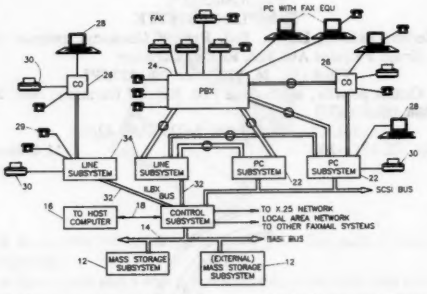
MESSAGE MANAGEMENT SYSTEM

Boaz Misholi, Ramat Hasharon, Israel, assignor to Efrat Future Technology Ltd., Israel

Filed Jul. 17, 1986, Ser. No. 887,793

Int. Cl.[5] H04M *3/50, 11/00;* **H04N** *1/32, 1/42*

U.S. Cl. 379—89 **13 Claims**



1. A message management system suitable for use with conventional telephones and conventional telefaxes comprising:

means for producing a combined multi-media message, including a facsimile portion and an aurally sensible portion;

single control means for transmitting the combined multimedia message to a selected subscriber;

apparatus for reading said facsimile portion; and

means for providing an aurally sensible output of said facsimile portion.

9. A message management system suitable for use with conventional telephones and conventional telefaxes comprising:

means for producing a combined multi-media message, including a facsimile portion and an aurally sensible portion;

single control means for transmitting the combined multimedia message to a selected subscriber;

apparatus for reading said facsimile portion; and

means for providing a visually sensible output of said facsimile portion on a computer display.

5,008,927

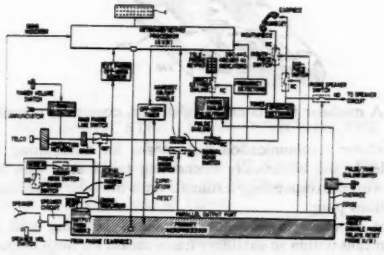
COMPUTER AND TELEPHONE APPARATUS WITH USER FRIENDLY COMPUTER INTERFACE INTEGRITY FEATURES

Lawrence D. Weiss, New York, N.Y.; Douglas W. Caruthers, Redondo Beach, Calif.; Charles T. Inatomi, Los Angeles, Calif.; Joseph C. Kawan, Hollywood, Calif.; Shan Lee, Rowland Heights, Calif.; Harvey Marks, Canoga Park, Calif.; Sarkis A. Meguerdijan, Glendale, Calif.; Dilip J. Parekh, Los Angeles, Calif.; Alfred S. Samulon, Malibu, Calif.; Melvin M. Takata, Hermosa Beach, Calif.; Morris L. Tucci, Van Nuys, Calif., and Jim R. Vollmer, Encino, Calif., assignors to Transaction Technology, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 190,440, May 5, 1988. This application Oct. 21, 1988, Ser. No. 260,832

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—98 4 Claims



1. A microcomputer with simplified user interface including a microprocessor computing unit and associated memory;

said microprocessor computing unit responsive to data inputs from an auxiliary processor and instructions maintained in said memory and received through a modem to perform computing and control functions, said microprocessor computing unit and said memory mounted in a housing configured as a conventional telephone unit,

said housing having a upper mounting structure and a base structure, a telephone handset mounted in a cradle on said upper mounting structure, a standard twelve-key telephone keypad mounted on said upper mounting structure and a keyboard input device mounted in concealed position within said base structure and movable to an open position for use by the operator of the microcomputer;

said housing also incorporating telephone electronics for standard telephone functioning, including a telephone dialer, speech network and a frequency and ring detectors, said telephone electronics capable of being powered from standard telephone line power;

switch means for providing telephone line power to said telephone electronics for standard telephone functioning in the absence of power to or input from the microprocessor computing unit and memory;

a lapse timer reset by output from said microprocessor computing unit, said lapse timer means providing an interrupt to said microprocessor computing unit unless reset by said microprocessor computing unit within a first predetermined time interval, said microprocessor computing unit being rebooted and removing power from said telephone electronics and said lapse timer means being disabled unless said lapse timer means is reset with a second predetermined time interval; and

off-hook detector means for detecting an off-hook condition of said telephone handset mounted on said upper mounting structure, off-hook timer means responsive to said off-hook detector means and said microprocessor computing unit to reboot said microprocessor computing unit and remove power from said telephone electronics unless said off-hook timer is not reset by said microprocessor computing unit within a third predetermined time interval.

5,008,928

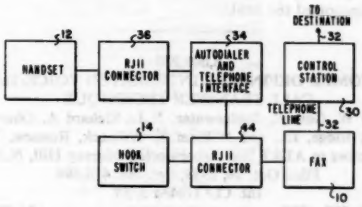
PUBLIC ACCESS FACSIMILE SYSTEM

Monica R. Cleghorn, Plano, Tex., assignor to Easyfax, Inc., Plano, Tex.

Filed Jan. 22, 1990, Ser. No. 468,219

Int. Cl.[5] H04M *17/00*; H04N *1/00*

U.S. Cl. 379—100 16 Claims



1. Apparatus for transmitting data from a first location to a second location via telecommunications link, comprising:

facsimile means for reading the data and for producing an electronic image thereof;

means for linking said facsimile means to an existing telecommunications system;

a control station linked to said facsimile means via said existing telecommunications system; and

means for automatically effecting a telephone connection between a user at said first location and a human operator at the control station, whereby the use can provide selected information, including the identity of the second location, to the control station, said control station for connecting said first and second locations via the existing telecommunications system to enable said image to be transmitted from said first location to said second location.

5,008,929

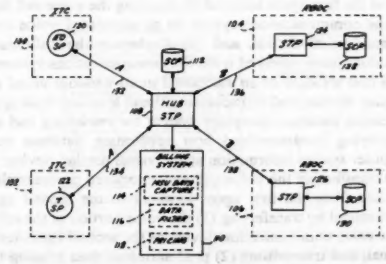
BILLING SYSTEM FOR TELEPHONE SIGNALING NETWORK

Steven A. Olsen, Tumwater; William J. Cronin; Ben L. Jarvis, both of Lacey, and Jeff G. McMillan, Olympia, all of Wash., assignors to U.S. Intelco Networks, Inc., Olympia, Wash.

Filed Jan. 18, 1990, Ser. No. 467,054

Int. Cl.[5] H04M *1/66, 15/04*

U.S. Cl. 379—112 19 Claims



1. In a telephone network having a plurality of offices through which telephone calls can be routed, each office being owned by a telephone company, each office including a signaling point (SP) that includes means for formulating a message signaling unit (MSU), the network further including a plurality of signal transfer points (STPs) for receiving and routing the MSUs, a plurality of digital data links connecting the SPs and

STPs to one another, and a plurality of service control points (SCPs), each SCP being linked to one of the STPs and comprising a database that includes call data provided by one or more telephone companies, the improvement comprising:

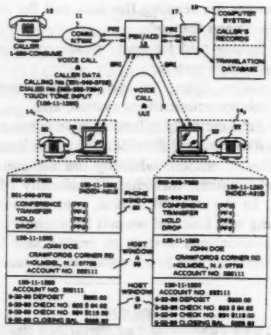
a billing system including means for capturing at least a portion of the MSUs received by said one STP and for processing such MSUs to produce usage data indicating service recipients and service providers for the MSUs, the service recipient for an MSU being the telephone company that owns the SP that formulated the MSU, and the service provider for an MSU being the telephone company that provided the call data for the MSU or that transported the MSU.

5,008,930

CUSTOMER DEFINABLE INTEGRATED VOICE/DATA CALL TRANSFER TECHNIQUE

George W. Gawrys, Bridgewater, N.J.; Richard A. Oberman, Park Ridge, Ill., and William T. Willcock, Rumson, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 24, 1989, Ser. No. 426,384
Int. Cl.[5] H04M *3/58*
U.S. Cl. 379—210 **11 Claims**



1. A method of transferring an integrated voice/data call signal including call-related data received from a communications system between a first and a second agent terminal, where each agent terminal is associated with at least one host application database computer system for storing information associated with each service or campaign that the first and second agent terminals is to handle, the method comprising the steps of:

(a) at the first agent terminal (i) directing the voice call from the communications system to an associated voice communication device, and (ii) displaying the call-related information received from the communications system in a first window of an associated multi-window visual display device, and (iii) accessing the at least one host application database computer system for retrieving and displaying predetermined host application database computer system information at the visual display device;

(b) transferring the voice call and associated predetermined data from the first agent terminal to the second agent terminal by transferring (1) the voice portion of the call to a voice communication device of the second agent terminal, and transmitting (2) predetermined data relating to a portion of the data currently displayed at the first agent terminal directly to the second agent terminal: and

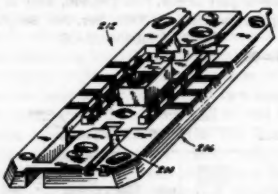
(c) at the second agent terminal, (1) receiving the voice call and predetermined data from the first agent terminal, and transmitting a certain portion of the received predetermined data to the associated at least one host application database computer system for retrieving and displaying the data associated with the call at a visual display device of the second agent terminal.

5,008,931

MULTI-PURPOSE MODULAR JACK CONNECTION BLOCK

Carl Siemon, Watertown, and Stephen M. Thomas, Torrington, both of Conn., assignors to The Siemon Company, Watertown, Conn.

Continuation of Ser. No. 99,423, Sep. 17, 1987, abandoned, which is a continuation-in-part of Ser. No. 706,971, Mar. 1, 1985, Pat. No. 4,712,234. This application Jan. 2, 1990, Ser. No. 462,341
Int. Cl.[5] H02B *1/10*
U.S. Cl. 379—399 **13 Claims**



1. A modular jack connecting device, consisting essentially of:

modular communication jack means for terminating wire leads and electrically connecting terminated wire leads with corresponding terminals on a modular communications plug;

first mounting means for removably securing said jack means within an auxilliary frame means for flush mounting the device on a planar surface of a substrate, on a bracket or on an electrical box; and

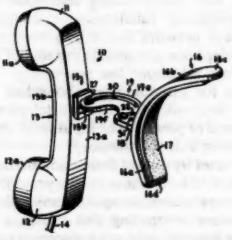
second mounting means for flush mounting said jack means on the planar surface of the substrate independent of said auxilliary frame.

5,008,932

ADJUSTABLE PHONE HANDSET SHOULDER SUPPORT

Earl M. Sieggen, 2000 W. 120th Ter., Leawood, Kans. 66209

Filed Feb. 3, 1989, Ser. No. 305,743
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—449 **7 Claims**



1. A device useable with a telephone handset of the type having an earpiece member and a mouthpiece member connected together by a handgrip member, said handgrip member having inner and outer sides with the inner side thereof corresponding to the speaking and listening portions of said earpiece and mouthpiece members, said device comprising:

(1) a first flange member removably mounted on the outer side of said telephone handset handgrip member intermediate the ear and mouthpiece members thereof and extending substantially normal thereto,

(2) an arcuate shoulder rest member of substantially rectangular form having an inner, concave, shoulder engagement side and an outer, convex side,

(3) a second flange member fixed to the outer convex side of said shoulder rest member intermediate the ends thereof and extending substantially normal thereto,

(4) said first and second flange members also extending, respectively, substantially at right angles to the longitudinal axis of said handset member and the longitudinal axis of said shoulder rest member and

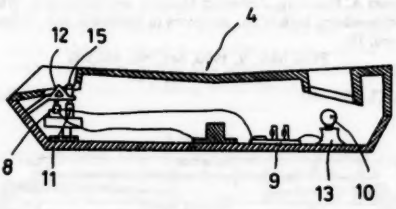
(5) an elongate, arcuate, flat connecting member so adjustably and removably connected to each of said first and second flanges at opposite ends thereof through first and second slotted openings in opposed regions of said connecting member, as to permit length and angle adjustment of the shoulder rest member with respect to the telephone handset.

5,008,933

AUTOMATIC STERILIZING DEVICE OF THE TELEPHONE

Chun-Hsien Kao, 4F., No. 11, Lane 223, Cheng-Kung Rd., Sec. 4, Nei-Hu Chu, Taipei, and Fu-Te Chen, 2F., No. 9, Hsi-Chang Rd., Taipei, both of Taiwan

Filed Sep. 16, 1988, Ser. No. 245,315
Int. Cl.[5] H04R *1/12*
U.S. Cl. 379—452 **1 Claim**



1. An automatic sterilizing device for a telephone having a mouthpiece and a receiver, said device comprising:

an ultraviolet bulb provided on a bulb seat under a mouthpiece seat for producing ultraviolet rays to pass through openings defined in the mouthpiece seat and radiate directly on the mouthpiece;

a microswitch disposed under a telephone cut-off press button which extends out from a receiver seat, said microswitch adapted to be contacted by a downward movement of the telephone cut-off press button to generate a signal when contacted by the press button;

an IC control circuit comprising a time delay circuit responsive to said signal for sending power to said ultraviolet bulb and for cutting off power to said ultraviolet bulb after a predetermined delay time from receipt of said signal by said delay circuit has occurred;

a contact button extending out from the receiver seat adapted to be depressed by insertion of the receiver into the receiver seat; and

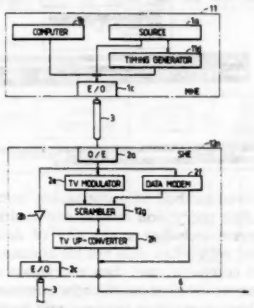
a safety switch installed under the receiver seat adapted to be contacted by depression of said contact button to turn off said ultraviolet bulb when said contact button is not depressed.

5,008,934

CATV TRANSMISSION SYSTEM USING SCRAMBLED SIGNALS

Fumio Endoh, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 8, 1989, Ser. No. 363,658
Claims priority, application Japan, Oct. 18, 1988, 63-260596
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—15 **7 Claims**



1. In a CATV system in which a main head end as a system center is connected to a plurality of subhead ends corresponding to respective terminal unit groups through optical fiber cables each having a narrow transmission band, and a baseband TV signal is transmitted through said optical fiber cables, the improvement comprising:

scrambling data generating means disposed in said main head end, for generating scrambling data and supplying said scrambling data to said optical fiber cables; and

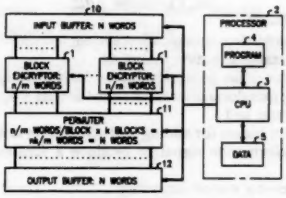
scrambling means disposed in each of said plurality of subhead ends, for performing a scrambling operation such that synchronization portions of said baseband TV signal are compressed on the basis of said scrambling data transmitted through said optical fiber cables.

5,008,935

EFFICIENT METHOD FOR ENCRYPTING SUPERBLOCKS OF DATA

Thomas J. Roberts, Batavia, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 30, 1989, Ser. No. 374,314
Int. Cl.[5] H04L *9/06*
U.S. Cl. 380—29 **13 Claims**



5. Apparatus for encrypting superblocks of data comprising:

means for encrypting each of a plurality of blocks of said superblocks of data, using a first key to form intermediate data, wherein each encrypted block and each unencrypted block comprises a plurality of segments, and each segment comprises a plurality of bits; and

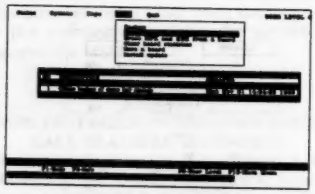
means for permuting segments of said intermediate data over the range of each of said superblocks using a second key to form encrypted superblocks of data.

5,008,936

BACKUP/RESTORE TECHNIQUE IN A MICROCOMPUTER-BASED ENCRYPTION SYSTEM

Scott B. Hamilton, Kirkland, and Michael J. Rosenow, Issaquah, both of Wash., assignors to The Exchange System Limited Partnership, Bellevue, Wash.

Filed Dec. 9, 1988, Ser. No. 282,791
Int. Cl.[5] H04L 9/08
U.S. Cl. 380—50 11 Claims



8. An improved method of updating key information in a multichannel data encryption device, said multichannel data encryption device including a plurality of data encryption devices coupled with a first data bus for communicating with a host control computer, said data encryption devices each including a discrete data bus interface for communicating with a device requiring encryption services, said method comprising the steps of:

sending encryption key tables to said data encryption devices from said host computer communicating through said first data bus;

encrypting said encryption key tables under a first predetermined encryption key;

storing said encrypted encryption key table in said data encryption devices;

outputting said encrypted key tables from said encryption devices through said first data bus to said host computer;

re-encrypting said encryption key tables under a second predetermined encryption key; and

storing said re-encrypted keys in a data storage device removable coupled to said host computer.

5,008,937

SCRAMBLED-COMMUNICATION SYSTEM USING ADAPTIVE TRANSVERSAL FILTERS FOR DESCRAMBLING RECEIVED SIGNALS

Yoshihiro Yamamura; Takashi Ogihara; Yoshinobu Nakanishi, and Tomohiro Nishizono, all of Tokyo, Japan, assignors to NEC Corporation

Filed Jun. 26, 1989, Ser. No. 371,209
Claims priority, application Japan, Jun. 25, 1988, 63-156012; Feb. 8, 1989, 1-30851
Int. Cl.[5] H04K 1/02
U.S. Cl. 380—50 10 Claims

1. A scrambled-communication system, comprising:

(a) a transmitting station including:

(i) source-noise generator means for generating a scrambling pseudorandom noise signal having a series of noise patterns; and

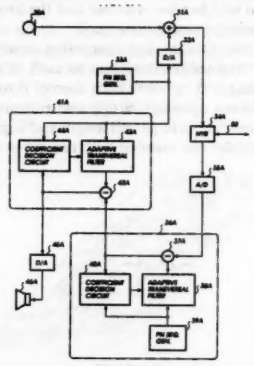
(ii) adder means for adding said scrambling noise signal to an information signal to produce a scrambled signal; and

(b) a receiving station including:

(i) subtractor means for receiving said scrambled signal and subtracting a noise-cancelling signal from the received signal to produce a subtractor output comprising a descrambled signal;

(ii) local-noise generator means for generating a descrambling pseudorandom noise signal having a series of noise patterns identical to that of said scrambling noise signal;

(iii) adaptive transversal filter means having a tapped-delay line connected to said local-noise generator means, a plurality of variable-tap weight multipliers connected respectively to taps of said tapped-delay line, and means for summing outputs of said tap weight multipliers and supplying summed outputs as said noise-cancelling signal to said subtractor means, said adaptive transversal filter having a tap length greater than an interval between successive series of said noise patterns of said descrambling noise signal; and



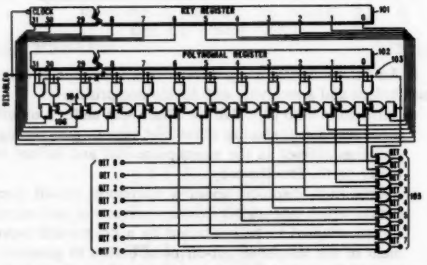
means for deriving tap coefficients from said descrambling noise signal and from the subtractor output and varying said tap weight multipliers of said adaptive transversal filter means with the derived tap coefficients so that said noise-cancelling signal substantially corresponds to said scrambling noise signal.

5,008,938

ENCRYPTION APPARATUS

Thomas A. Freeburg, Arlington Heights, and Richard E. White, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 9, 1990, Ser. No. 490,900
Int. Cl.[5] H04L 9/00
U.S. Cl. 380—50 18 Claims



1. An apparatus for encrypting and decrypting an input signal from a signal source to produce an encrypted or decrypted output signal using a preselected key signal and a preselected polynomial signal, comprising:

(a) first storage means for storing the preselected key signal, the first storage means having at least one output;

(b) shift register means, having at least one stage, each stage having an output, and a load input, the load input of each stage coupled to one output of the first storage means;

(c) second storage means for storing the pre-selected polynomial signal, the second storage means having at least one output;

(d) first means for logically combining the at least one output

of the second storage means and the at least one output of the shift register means, the first means for logically combining having at least one output coupled to the input of the at least one stage of the shift register means; and

(e) second means for logically combining the at least one output of the shift register means and the input signal, an output of the second means for combining being the encrypted or decrypted output signal.

5,008,939

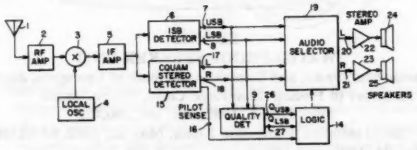
AM NOISE REDUCING

Amar G. Bose, Wayland, and William R. Short, Wellesley, both of Mass., assignors to Bose Corporation, Framingham, Mass.

Filed Jul. 28, 1989, Ser. No. 387,504

Int. Cl.[5] H04H 5/00

U.S. Cl. 381—15 **31 Claims**



1. A receiver for receiving an amplitude modulated signal with upper and lower sidebands carrying a modulating audio signal, said receiver comprising,

independent sideband circuitry for providing at least one of upper and lower sideband signals,

at least one quality detector for providing a quality signal representative of undesired noise in the upper sideband signal relative to that in the lower sideband signal,

and at least one selector responsive to said quality signal for processing that one designated by said quality signal as preferred from the standpoint of faithful reproduction with low audible noise of only said upper sideband signal, only said lower sideband signal and both said upper and lower sideband signals to provide an audio output signal with reduced noise that is a substantially faithful reproduction of said modulating audio signal.

5,008,940

METHOD AND APPARATUS FOR ANALYZING AND RECONSTRUCTING AN ANALOG SIGNAL

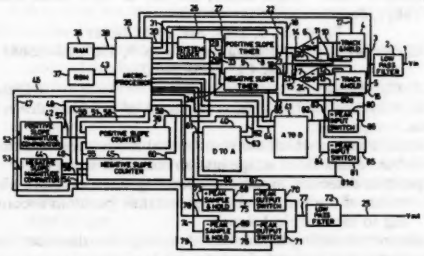
Dieter W. Blum, Vancouver, Canada, assignor to Integrated Circuit Technologies Ltd., Bridgetown, Barbados

Filed Feb. 15, 1989, Ser. No. 311,241

Claims priority, application Canada, Feb. 16, 1988, 558977

Int. Cl.[5] G10L 5/00

U.S. Cl. 381—31 **34 Claims**



1. A method of analyzing an original analog signal, the method comprising; detecting each maximum and minimum point of the signal; recording the time between each adjacent pair of maximum and minimum points; and sampling and recording the magnitude of the signal at each maximum and minimum point.

5,008,941

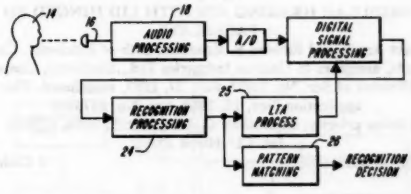
METHOD AND APPARATUS FOR AUTOMATICALLY UPDATING ESTIMATES OF UNDESIRABLE COMPONENTS OF THE SPEECH SIGNAL IN A SPEECH RECOGNITION SYSTEM

Vladimir Sejnoha, Cambridge, Mass., assignor to Kurzweil Applied Intelligence, Inc., Waltham, Mass.

Filed Mar. 31, 1989, Ser. No. 332,571

Int. Cl.[5] G10L 5/00

U.S. Cl. 381—43 **24 Claims**



1. In a speech recognition apparatus for recognizing elements of a speech input, apparatus for updating an error compensation signal representing a system transfer function between a speaker and the recognition apparatus, said updating apparatus comprising:

A. signal generating means for initially generating said compensation signal,

B. means for generating, from said speech input, a succession of input frames representing said speech input modified by a said compensation signal, each input frame including, as a distorting value, an error signal corresponding to the difference between a current compensation signal and the instantaneous value of a system transfer function,

C. means for associating each speech representing input frame with one of a plurality of speech representing standard frames,

D. means for accumulating the differences between successive speech representing input frames and the respective associated speech representing standard frames,

E. means for periodically determining an average update signal over a plurality of input words representative of a selected number of said accumulated differences, and

F. means for updating said compensation signal in accordance with said average update signal.

5,008,942

DIAGNOSTIC VOICE INSTRUCTING APPARATUS

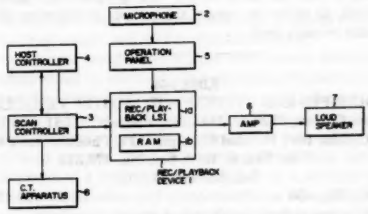
Hiromi Kikuchi, Utsunomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 30, 1988, Ser. No. 277,865

Claims priority, application Japan, Dec. 4, 1987, 62-307015

Int. Cl.[5] G10L 5/02; A61B 5/00; G11B 31/00; G09B 5/00

U.S. Cl. 381—51 **10 Claims**



1. A voice instruction-generating apparatus for use with a

medical diagnostic apparatus, the voice instruction-generating apparatus comprising:

recording means for recording plural types of voice instructions to a patient to be diagnosed, the plural types of one voice instruction having a same meaning in different types of expressions;

designating means for specifying a series of said recorded voice instructions, each instruction of the series being one of the same types of expressions; and

playback means for reproducing the series of voice instructions in synchronism with an operation of said medical diagnostic apparatus.

5,008,943

MODULAR HEARING AID WITH LID HINGED TO FACEPLATE

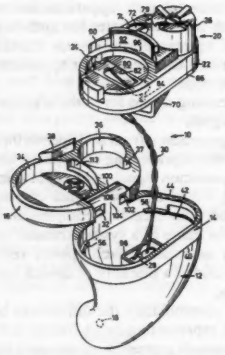
Horst Arndt, and Edward S. Kroetsch, both of Kitchener, Canada, assignors to Unitron Industries Ltd., Kitchener, Canada

Division of Ser. No. 7,032, Jan. 27, 1987, abandoned. This application Nov. 15, 1989, Ser. No. 437,046

Claims priority, application Canada, Oct. 7, 1986, 520021

Int. Cl.[5] H04R *25/02*

U.S. Cl. 381—68.6 **3 Claims**



1. In combination, an in-the-ear hearing aid having a shell, a faceplate, and an electronic module; and a gauge for use in fitting said faceplate to said shell; said shell having an open end and being shaped to fit into a user's ear with said open end facing outwardly in said ear, said faceplate being shaped to be fitted on and attached to said open end of said shell and having an opening therein to receive said module, said module having a microphone, an amplifier and a battery compartment, said module having an upper portion shaped to be snugly received within said opening of said faceplate and a lower portion which projects below said opening of said faceplate into said shell, said gauge also having an upper portion shaped to fit snugly within said opening of said faceplate and having a lower portion shaped to simulate the shape of said lower portion of said module, whereby said gauge can be inserted into said opening of said faceplate before said faceplate is attached to said shell, in order to ensure the proper positioning of said faceplate on said shell.

5,008,944

LOUDSPEAKER SYSTEM FOR MOTOR VEHICLES

Michael O. Sels, 8524 N. 23nd Dr., Phoenix, 85051, and Bryan D. Combs, 1001 N. 32nd St., Apt. C-21, Phoenix, Ariz. 85008

Filed Feb. 6, 1990, Ser. No. 475,812

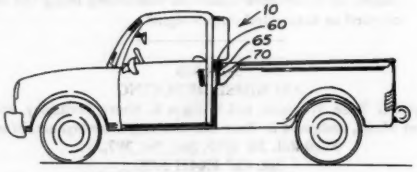
Int. Cl.[5] H04B *1/00*

U.S. Cl. 381—86 **10 Claims**

1. A motor vehicle loudspeaker system, comprising:

(a) a sound box of shape and size suitable for mechanical installation in the rear windshield space of, and mounted in, the rear window of said motor vehicle;

(b) loudspeakers contained in said sound box and facing an interior of said motor vehicle; and



(c) means for electrically connecting said loudspeakers to an audio amplifier in said motor vehicle.

5,008,945

WATER-PROOF SPEAKER UNIT

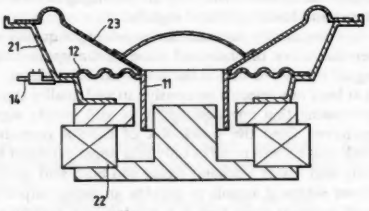
Fumio Murayama, and Tomiaki Ando, both of Yamagata, Japan, assignors to Pioneer Electronic Corp., Tokyo, Japan

Filed Dec. 6, 1988, Ser. No. 280,413

Claims priority, application Japan, May 23, 1988, 63-127388; May 24, 1988, 63-127662

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—194 **3 Claims**



1. A speaker unit, comprising:

a voice coil bobbin for carrying a voice coil; and

a damper extending radially outwardly from the periphery of said voice coil bobbin, said voice coil bobbin and dampler being integrally molded of plastic, wherein said voice coil is molded into said voice coil bobbin, and further comprising at least one lead wire extending from said voice coil through said voice coil bobbin, said at least one lead wire being molded into said damper.

5,008,946

SYSTEM FOR RECOGNIZING IMAGE

Mitsuhiro Ando, Tokyo, Japan, assignor to Aisin Seiki K.K., Tokyo, Japan

Filed Sep. 9, 1988, Ser. No. 242,441

Claims priority, application Japan, Sep. 9, 1987, 62-225862

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—2 **1 Claim**

1. A system for recognizing an image of a vehicle driver's face, comprising:

camera means which converts optical information obtained from a first facial image into an electrical signal;

position-detecting means for detecting three or more elements of the first facial image and their positions according to the electrical signal;

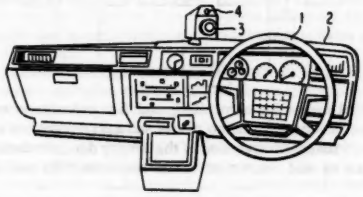
distance-detecting means for detecting the distances between the detected elements;

normalizing means for normalizing data about the detected distances with the distance between given two of the detected elements;

storage means which hold reference values previously as-

signed to the elements of the first facial image, said reference values being standard values previously determined from a plurality of facial images similar to said first facial image;

similarity degree-calculating means which compares the normalized data about the distances with the reference values of similarity to the elements and produces data about the degrees of a reference image by employing a weighting system; and



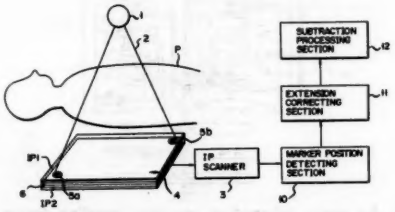
determining means which determines whether the facial image has been successfully detected, from the data about the degrees of similarity of the detected elements, wherein, after the determining means determines that the first facial image has been successfully detected, a second facial image is read, and changes in conditions of the second facial image are detected by comparison to the first facial image, and that electrical devices are controlled based on the detected changes in conditions.

5,008,947

METHOD AND APPARATUS FOR CORRECTING EXTENSION RATES OF IMAGES

Naoki Yamada, Nishinasunomachi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 10, 1989, Ser. No. 419,114
Claims priority, application Japan, Oct. 13, 1988, 63-257692
Int. Cl.[5] G06K *9/00, 9/32;* **H05G** *1/28*
U.S. Cl. 382—6 **10 Claims**



1. A method for reducing and expanding images, the method comprising the steps of:

acquiring a plurality of images, each image including a plurality of marker images;

detecting positions of the marker images on each image;

calculating marker image intervals from the detected marker image positions;

selecting one of the plurality of images as a standard image;

fitting a position of a remaining image to that of the standard image by a rotation and shift process, the remaining image being one of the plurality of images other than the standard image;

obtaining an extension rate from the calculated marker image intervals of the marker image positions of the selected standard image and the remaining image; and

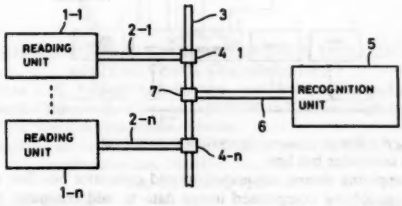
reducing or expanding the remaining image in accordance with the obtained extension images in a predetermined interval.

5,008,948

SYSTEM FOR RECOGNIZING HANDWRITTEN LETTERS

Tomohiro Tsukawaki, Iwatsuki, Japan, assignor to Fuji Xerox Co., Ltd., Saitama, Japan

Filed Mar. 25, 1988, Ser. No. 173,617
Claims priority, application Japan, Jun. 15, 1987, 62-148651
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—13 **8 Claims**



1. A system for recognizing handwritten letters comprising:

a central recognition means;

a plurality of terminal units, each including a transmission request section for making a transmission request for handwritten letter information, a first compressing/expanding means for expanding compressed information received and for compressing information for transmitting, and a first interface means for transmitting and receiving information; each of said terminal units being separate from said recognition means;

a plurality of reading means each including a reading section for reading the handwritten letter and converting said handwritten letter to computer readable data, a second compressing/expanding means for compressing the readout handwritten letter data and for expanding the information when compressed information is received and a second interface means for transmitting information including the handwritten letter data; said reading means being separate from said recognition means and each of said terminal units;

said central recognition means including a third compressing/expanding means for expanding the compressed handwritten letter data when the compressed handwritten letter data is transmitted from said reading means and for compressing the data when the data is received, said recognition means recognizing information from the expanded handwritten letter data, and a third interface means for compressing and transmitting said recognized information in accordance with said transmission request from said terminal unit; and

a transmission path for connecting said terminal units, said reading means, and said recognition means;

whereby said computer readable handwritten letter data is compressed by said second compressing/expanding means and transmitted to said recognition unit where it is expanded by said third compressing/expanding means and then recognized by said recognition means and compressed by said third compressing/expanding means in response to a transmission request from a selected one of said terminal units; said compressed data being transmitted to said selected terminal unit where it is expanded by said first expanding/compressing means and viewed.

5,008,949

IMAGE PROCESSING SYSTEM

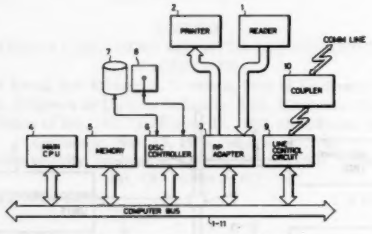
Shinobu Arimoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 14,077, Feb. 3, 1987, abandoned, which is a continuation of Ser. No. 645,166, Aug. 28, 1984, abandoned. This application May 21, 1990, Ser. No. 527,707

Claims priority, application Japan, Aug. 30, 1983, 58-158452; Aug. 30, 1983, 58-158454; Aug. 30, 1983, 58-158456

Int. Cl.[5] G06K 9/00

U.S. Cl. 382—41 11 Claims



1. An image processing system comprising:

a computer bus line;

supplying means, connected to said computer bus line, for supplying compressed image data to said computer bus line;

storing means, connected to said computer bus line, for storing the compressed image data transmitted through said computer bus line from said supplying means;

expanding means, connected to said storing means without using said computer bus line, for expanding the compressed image data read out from said storing means into image data;

reproducing means, connected to said expanding means without using said computer bus line, for reproducing an image in accordance with the image data from said expanding means; and

means for enabling transfer of the compressed image data through said computer bus line from said supplying means to said storing means whenever a predetermined amount of compressed image data stored in said storing means is expanded by said expanding means.

5,008,950

IMAGE PROCESSING METHOD AND APPARATUS FOR ERROR-DISPERSION DIGITIZATION WITHOUT MOIRE OR SPURIOUS STRIPE FORMATION

Akihiro Katayama, Kawasaki, and Hidefumi Ohsawa, Urawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1988, Ser. No. 145,593

Claims priority, application Japan, Jan. 22, 1987, 62-013688; May 21, 1987, 62-122613; May 21, 1987, 62-122614

Int. Cl.[5] G06K 9/40

U.S. Cl. 382—50 11 Claims

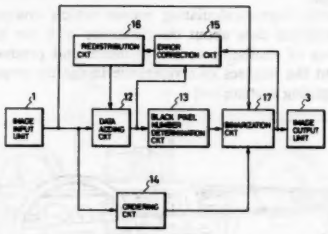
1. An image processing apparatus comprising:

first calculation means for calculating a sum of density data of plural pixels existing in a first area composed of plural pixels;

second calculation means for calculation, from the sum of density data, a number of black pixels to be arranged in the first area and a difference between the sum of density data and a sum of densities of the black pixels;

conversion means for converting density data of all pixels existing in the first area into binary data, based on the number of black pixels obtained by said second calculation means;

process means for dispersing data corresponding to said difference obtained by said second calculation means into a second area which is composed of plural pixels and adjacent to the first area; and



control means for controlling said first calculation means, said second calculation means and said conversion means such that the conversion of the density data into the binary data by said conversion means is executed for each area.

5,008,951

IMAGE INFORMATION ENCODING/DECODING DEVICE

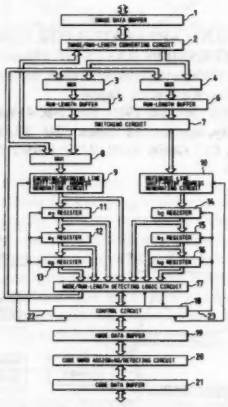
Yutaka Koshi, Kanagawa, Japan, assignor to Fuji Xerox, Tokyo, Japan

Filed Aug. 29, 1989, Ser. No. 399,932

Claims priority, application Japan, Sep. 2, 1988, 63-221181

Int. Cl.[5] G06K 9/36

U.S. Cl. 382—56 5 Claims



1. An image information encoding/decoding device for carrying out two-dimensional encoding and decoding processings, comprising:

(a) an image data buffer memory for receiving an image data in an encoding operation and outputting an image data in a decoding operation;

(b) an image/run-length converting circuit for converting the image data received by said image data buffer to a run-length data in the encoding operation, and converting a run-length data to the image data in the decoding operation;

(c) two run-length buffers each for storing one line portion of the run-length data, arranged such that while a run-length data of an encoding line or a decoding line is stored in one of said run-length buffers, a run-length data of a reference line is stored in the other;

(d) an encoding/decoding line shift-point address generating circuit for generating encoding line shift-point addresses by sequentially adding the run-length data of the encoding

line in the encoding operation, and generating decoding line shift-point addresses by sequentially adding decoded run-length data in the decoding operation;

(e) a reference line shift-point address generating circuit for generating reference line shift-point addresses by sequentially adding the run-length data of the reference line;

(f) pipeline-connected a_2, a_1 and a_0 registers for sequentially storing the encoding line shift-point addresses or the decoding line shift-point addresses that are generated in said encoding/decoding line shift-point address generating circuit;

(g) pipeline-connected b_2, b_1 and b_0 registers for sequentially storing the reference line shift-point addresses that are generated in said reference line shift-point address generating circuit;

(h) a mode/run-length detecting logic circuit for detecting a current operation mode based on the encoding line shift-point addresses and the reference line shift-point addresses and outputting a mode data in the encoding operation, and generating the run-length data based on an input mode data in the decoding operation;

(i) a control circuit for switching a control mode and data paths between the encoding and decoding operations, and controlling the encoding operation or the decoding operation; and

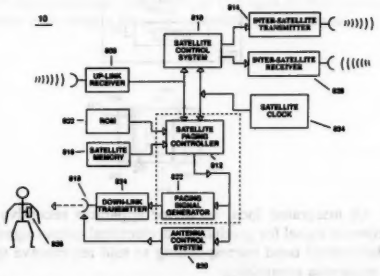
(j) a code word assigning/detecting circuit for assigning and outputting a code word that corresponds to the mode data in the encoding operation, and converting a received code word to the mode data in the decoding operation.

5,008,952

GLOBAL SATELLITE COMMUNICATION SYSTEM WITH GEOGRAPHIC PROTOCOL CONVERSION

Walter L. Davis, Coral Springs, and Philip P. Macnak, West Palm Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1989, Ser. No. 431,105
Int. Cl.[5] H04B 7/185
U.S. Cl. 455—12 **48 Claims**



1. A satellite paging system providing geographic protocol conversion for data packet delivery to a plurality of geographic areas, said satellite based communication system comprising:

transmission means, for transmitting data packets to the communication satellite, the data packets being transmitted in a first predetermined data format;

a satellite having,

satellite receiving means, for receiving the transmitted data packets transmitted in the first predetermined data format;

programmable encoding means, coupled to said receiving means, for encoding the received data packets transmitted in the first predetermined data format into encoded data packets in a second predetermined data format corresponding to the signaling requirements of each geographic delivery area;

satellite transmitting means, coupled to said encoding means, for transmitting the encoded data packets in the second predetermined data format; and

a portable communication receiver, operable in the second predetermined data format in the geographic delivery area, for receiving the encoded data packets transmitted in the second predetermined data format,

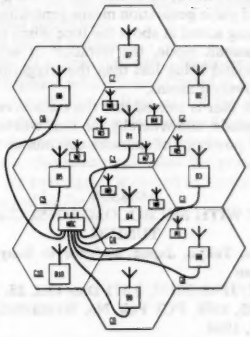
whereby data packets transmitted to said satellite in the first predetermined data format are converted within said satellite to the second predetermined data format conforming to the signaling requirements for transmission to said portable communication receiver in the geographic delivery area.

5,008,953

MOBILE STATION LINK SUPERVISION UTILIZING DIGITAL VOICE COLOR CODES

Steinar J. E. A. Dahlin, Sollentuna, and Walter Ghisler, Upplands Väsby, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 371,126, Jun. 26, 1989. This application Jan. 10, 1990, Ser. No. 463,305
Int. Cl.[5] H04Q 7/04
U.S. Cl. 455—33 **27 Claims**



8. A mobile station for use in a mobile radio communication system of the type in which digitally encoded information is transmitted between a base station and the mobile station in bursts over a digital communication channel, with at least some of the bursts of information containing digital voice color codes, said mobile station comprising:

a memory for storing a digital voice color code;

means for initiating a timer for counting a predetermined period of time;

a receiver for receiving bursts of information transmitted from said base station to said mobile station during a connection between said stations on a designated digital communication channel;

a decoder for detecting any digital voice color codes contained in bursts of information received over said designated channel during a connection;

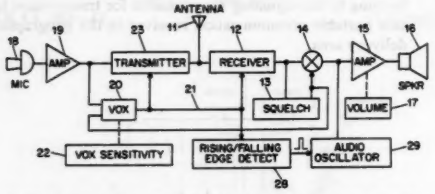
means for determining whether a first predetermined number of digital voice color codes which match the digital voice color code stored in said memory are received during the predetermined time counted by said timer; and

means for terminating said connection if said first predetermined number of codes are not received during said period of time.

5,008,954
VOICE-ACTIVATED RADIO TRANSCEIVER

Carl Oppendahl, 27 W. 44th St., #28, New York, N.Y. 10035-6645

Continuation of Ser. No. 334,190, Apr. 6, 1989. This application Sep. 24, 1990, Ser. No. 587,602
Int. Cl.[5] H04B 1/44
U.S. Cl. 455—79 8 Claims



1. In a transceiver of the type having a transmit mode, a receive mode, and a squelched mode, and wherein the transceiver enters receive mode upon receipt of a signal having a strength greater than a predetermined squelch threshold, and wherein the transceiver enters transmit mode by voice activation of a voice activation means having a triggering time, and wherein the audio signal received by the receiver portion of the transceiver is conveyed to the user by speaker means, the improvement wherein is provided:

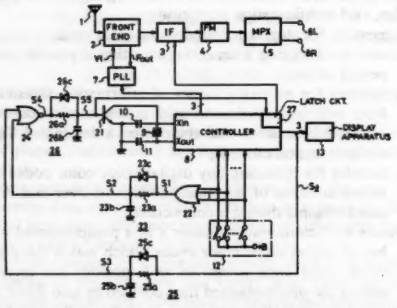
sound pulse generation means responsive to the voice activation for generating a momentary alerting sound audible to the user and conveyed to the user by the speaker means, said sound pulse generation means generating the momentary alerting sound at about the time when the transceiver enters transmit mode, the duration of said momentary alerting sound being less than the triggering time of the voice activation means,

whereby the user is alerted that the transceiver has entered transmit mode, and whereby the user will be made aware of loss of power or of spurious continuous transmission.

5,008,955
RECEIVERS WITH MICROCOMPUTER CONTROLLED TUNING

Kazuhiro Sato, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP88/00197, § 371 Date Oct. 25, 1988, § 102(e) Date Oct. 25, 1988, PCT Pub. No. WO88/06820, PCT Pub. Date Sep. 7, 1988
PCT Filed Feb. 25, 1988, Ser. No. 269,143
Claims priority, application Japan, Feb. 26, 1987, 62-43433
Int. Cl.[5] H04B 1/10
U.S. Cl. 455—181 6 Claims

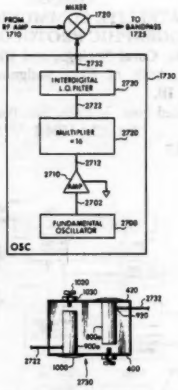


1. A receiver having an IF stage and characterized by a microcomputer for generating station selecting data and a clock signal, said microcomputer having a latch means for storing data supplied to said IF stage for controlling the bandwidth theses, tuning means supplied with said station selecting data in synchronism with said clock signal and which is tuned to a desired broadcasting frequency, said IF stage being connected to said tuning means to receive the output of said tuning means and connected to said latch means to receive data from said microcomputer, a detecting circuit for detecting whether said tuning means is selecting a station or not and a switching circuit which automatically stops the generation of said clock signal from said microcomputer based on the output from said detecting circuit when the station selecting operation of said tuning means is finished, and means responsive to operation of said detecting circuit and connected to said latch means to prevent the data in said latch means for changing during the period in which generation of said clock signal is stopped.

5,008,956
INTERDIGITAL LOCAL OSCILLATOR FILTER APPARATUS

Dale L. Hemmie, Burlington, Iowa, assignor to Conifer Corporation, Burlington, Iowa

Continuation-in-part of Ser. No. 261,557, Oct. 24, 1988, which is a continuation of Ser. No. 102,726, Sep. 30, 1987, Pat. No. 4,791,717. This application May 23, 1989, Ser. No. 355,992
The portion of the term of this patent subsequent to Dec. 20, 2005, has been disclaimed.
Int. Cl.[5] H04B 1/26; H01P 1/205; H05K 7/02
U.S. Cl. 455—318 2 Claims



2. An integrated local oscillator apparatus receptive of a microwave signal for producing an electrical output signal in a predetermined band corresponding to said microwave signal, said apparatus comprising:

a printed circuit board,

a fundamental oscillator for generating a signal at a fixed frequency,

an amplifier connected to said fundamental oscillator for amplifying the signals from said fundamental oscillator;

means connected to said amplifier for producing multiples of said frequency,

an interdigital filter located on said printed circuit board having an input connected to said producing means and an output for said electrical output signal, said interdigital filter comprising:

(a) a ground plane conductive surface formed on said printed circuit board,

(b) a conductive rectangular housing having an interior and an open bottom, said housing having said open bottom soldered to said conductive surface in order to fully enclose the interior of said housing in a conductive envelope, and

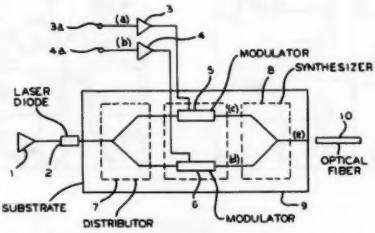
(c) a plurality of conductive elements spatially located in said housing for filtering a predetermined multiple of said frequency from said multiples of said frequency for delivery as said output signal, one of said elements connected to said producing means and another one of said elements connected to said output.

5,008,957

MULTILEVEL OPTICAL SIGNAL TRANSMITTER

Mikio Kiyono, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 3, 1989, Ser. No. 318,710
Claims priority, application Japan, Mar. 3, 1988, 63-48613
Int. Cl.[5] H04B *10/00*
U.S. Cl. 455—618 **4 Claims**



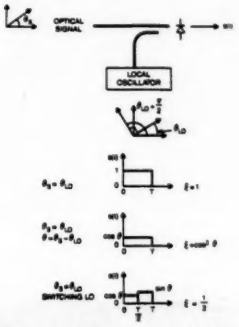
1. A multilevel optical signal transmitter comprising a substrate, a laser diode positioned to direct light into said substrate, distributor means on said substrate for directing said light into two separate paths, modulating means in each of said separate paths for controlling the intensity of light passing through the respective paths to be at either of two intensity levels, drive means associated with said modulating means for selectively switching said modulator to pass said light at a given one of said two intensity levels, and means for combining the switched light in said two paths for providing an optical output signal having instantaneous intensities which are sums of the instantaneous intensities of the light in said two paths, thereby providing a three level optical output signal.

5,008,958

POLARIZATION-INSENSITIVE TECHNIQUE FOR COHERENT OPTICAL COMMUNICATION

Leonard J. Cimini, Jr., Howell, and Isam M. I. Habbab, Old Bridge, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 145,446, Jan. 19, 1988, abandoned, and a continuation-in-part of Ser. No. 145,358, Jan. 19, 1988, abandoned. This application Feb. 8, 1989, Ser. No. 308,697
Int. Cl.[5] H04B *10/06*
U.S. Cl. 455—619 **6 Claims**



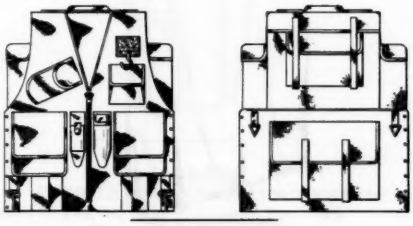
1. A method of polarization insensitive coherent detection of an optical signal comprising,

mixing two optical signals,

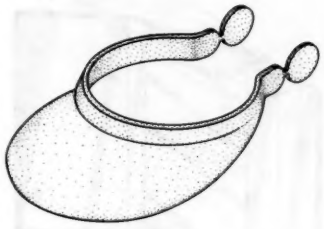
at least one of which comprises a bit stream representative of intelligence which is transmitted at a given bit rate, the polarization of at least one of the signals varying independently of the polarization of the other signal at a rate slower than the given bit rate,

the invention characterized in that the polarization of the other of the two signals is caused to vary at a rate greater than or equal to the bit rate.

316,172
COMBINED VEST AND BACKPACK
James M. Hanson, Quinhagak, Ak., assignor to Wallace G. Miller, Olympia, Wash.
Filed Apr. 22, 1988, Ser. No. 184,708
Term of patent 14 years
U.S. Cl. D2—184

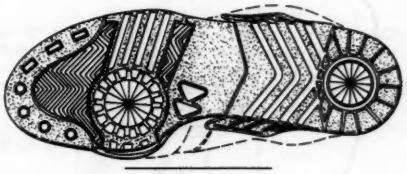


316,173
VISOR
George A. Morris, Jr., 720 Fair Oaks Manor, Atlanta, Ga. 30327
Filed Jan. 4, 1988, Ser. No. 140,420
Term of patent 14 years
U.S. Cl. D2—247

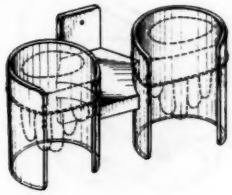


316,174
BACK TAB OF A SHOE
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc. and Nike International Ltd., both of Beaverton, Oreg.
Filed Jun. 15, 1990, Ser. No. 538,493
Term of patent 14 years
U.S. Cl. D2—314

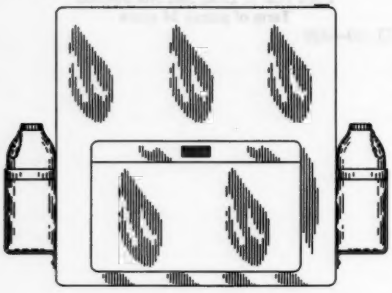
316,175
SHOE SOLE
Frank Legacki; James L. Grau, both of San Antonio, Tex.; Rory W. Fuerst, Menlo Park, Calif., and James E. Granville, San Antonio, Tex., assignors to Kaepa, Inc., San Antonio, Tex.
Filed Feb. 9, 1988, Ser. No. 308,855
Term of patent 14 years
U.S. Cl. D2—320

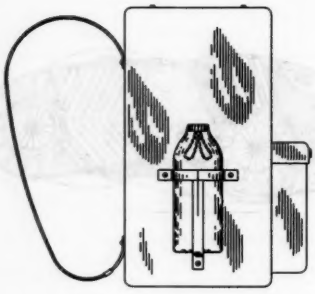


316,176
GLOVE DONNING AID
Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products Inc., Salt Lake City, Utah
Filed Oct. 9, 1987, Ser. No. 107,035
Term of patent 14 years
U.S. Cl. D2—641

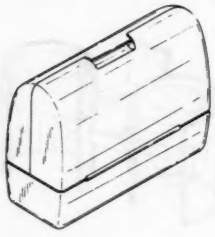


316,177
BACKPACK
Kelly J. Strimpfel, 6032-3 New Forest Ct., Waldorf, Md. 20603
Filed Mar. 29, 1990, Ser. No. 500,841
Term of patent 14 years
U.S. Cl. D3—32

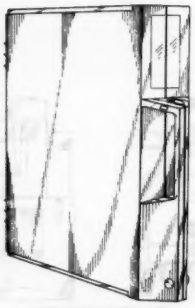




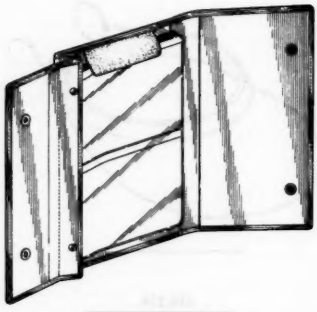
316,178
CASE FOR MAGNETIC TAPE CASSETTES
Noboru Uemura, Odawara, Japan, assignor to TDK Corporation, Tokyo, Japan
Filed Aug. 27, 1987, Ser. No. 89,850
Term of patent 14 years
U.S. Cl. D3—35



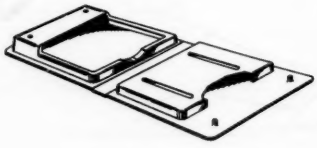
316,179
ATTACHE CASE FOR DISKS
Makio Hasuike, Milan, Italy, assignor to Seima Italiana SpA, Tolmezzo, Italy
Filed Jan. 15, 1988, Ser. No. 144,855
Claims priority, application Italy, Jul. 21, 1987, 60408/87[U]
Term of patent 14 years
U.S. Cl. D3—35



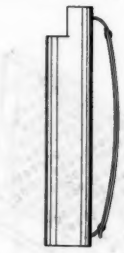
316,180
PORTFOLIO FOR A COMPUTER DISC, A COMPACT DISC OR THE LIKE
Ross M. Hines, P.O. Box 9341, Hampton, Va. 23670-0341
Filed Mar. 21, 1990, Ser. No. 496,831
Term of patent 14 years
U.S. Cl. D3—35



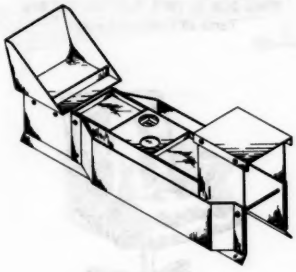
316,181
DISKETTE MAILER
J. T. Clifton, Elginburg, Canada, assignor to Pacware Systems, a Div of 166117 Canada, Inc., Ottawa, Canada
Filed Apr. 26, 1990, Ser. No. 514,565
Claims priority, application Canada, Mar. 14, 1990, 14-03-90-2
Term of patent 14 years
U.S. Cl. D3—35



316,182
GOLF CLUB CARRIER
Eugene S. Witchger, 210 W. 77th St., Indianapolis, Ind. 46260
Filed Aug. 29, 1988, Ser. No. 237,457
Term of patent 14 years
U.S. Cl. D3—37

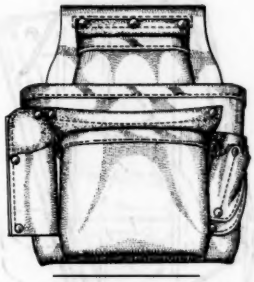


316,183
CONSOLE FOR AN EMERGENCY VEHICLE
James H. Pax, 702 Eleanor, Houston, Tex. 77009
Filed Jun. 3, 1987, Ser. No. 56,974
Term of patent 14 years
U.S. Cl. D3—40

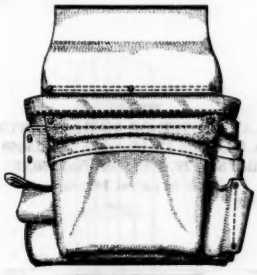


316,184
TETHERED HOLDER FOR CYLINDRICAL ARTICLES
John P. Mikkelsen, Santa Monica, Calif., assignor to Dermalabs Research, Inc., Minneapolis, Minn.
Filed Nov. 7, 1988, Ser. No. 267,781
Term of patent 14 years
U.S. Cl. D3—100

316,185
TOOL CADDY
Brett P. Seber, Laguna Niguel, Calif., assignor to McGuire-Nicholas Company, Inc., City of Commerce, Calif.
Filed Mar. 14, 1988, Ser. No. 167,461
The portion of the term of this patent subsequent to Apr. 16, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—105

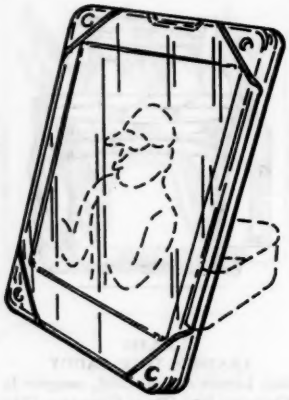


316,186
LEATHER TOOL CADDY
Brett P. Seber, Laguna Niguel, Calif., assignor to McGuire-Nicholas Company, Inc., City of Commerce, Calif.
Filed Mar. 14, 1988, Ser. No. 167,462
The portion of the term of this patent subsequent to Apr. 16, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—105

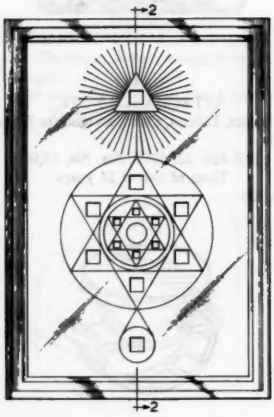


316,187
ATTACHABLE TOTE
Michael C. Rodgers, Lomita, Calif., assignor to Zinka Inc., Long Beach, Calif.
Filed Jun. 22, 1987, Ser. No. 65,004
Term of patent 14 years
U.S. Cl. D3—106

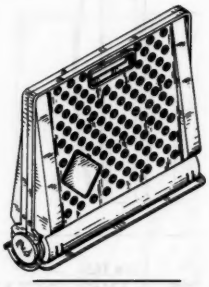
316,188
DISPLAY UNIT OR THE LIKE
John K. Connor; Charles M. Connor, Jr., and H. B. Stroup, Jr., all of Asheville, N.C., assignors to Collector's Products Corporations, Asheville, N.C.
Filed Jul. 7, 1989, Ser. No. 377,009
Term of patent 14 years
U.S. Cl. D6—300



316,189
DISPLAY DEVICE OR SIMILAR ARTICLE
Elton Watkins, P.O. Box 12, Hampton, Va. 23669
Filed Sep. 29, 1988, Ser. No. 250,489
Term of patent 14 years
U.S. Cl. D6—301



316,190
COMBINED PORTABLE SEAT AND CARRYING CASE
Yiftah Sadan, Beit Zera, Israel, assignor to Ar-Kal Plastics Products Beit Zera (1973), Israel
Filed Sep. 18, 1987, Ser. No. 98,512
Claims priority, application Israel, Mar. 22, 1987, 12393
Term of patent 14 years
U.S. Cl. D6—335

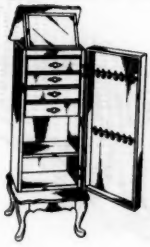


316,191
CHAIR
Robert L. Wilson, Memphis, Tenn., and John R. Stafford, Greensboro, N.C., assignors to Chromcraft Furniture Corp., Senatobia, Miss.
Filed Jun. 4, 1990, Ser. No. 532,498
Term of patent 14 years
U.S. Cl. D6—366

316,192
CHAIR
Edsel E. Murry, Coldwater, Miss., and John R. Stafford, Greensboro, N.C., assignors to Chromcraft Furniture Corp., Senatobia, Miss.
Filed Jun. 4, 1990, Ser. No. 533,062
Term of patent 14 years
U.S. Cl. D6—366

316,193
BLANKET RACK
Peter M. Y. Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Division of Ser. No. 295,566, Jan. 10, 1989. This application Nov. 20, 1989, Ser. No. 428,652
Term of patent 14 years
U.S. Cl. D6—413

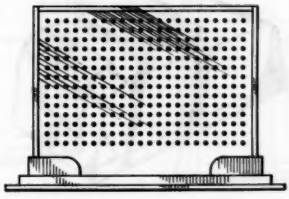
316,194
CHEST
Larry Powell, Los Angeles, Calif., assignor to L. Powell Co., Culver City, Calif.
Continuation-in-part of Ser. No. 247,091, Sep. 20, 1988. This application May 24, 1989, Ser. No. 356,835
The portion of the term of this patent subsequent to Feb. 5, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—440



316,195
DOUBLE HELIX BOOKCASE
David S. Mark, San Francisco, Calif., assignor to Space Age Design Furniture, San Francisco, Calif.
Filed Dec. 23, 1987, Ser. No. 137,380
Term of patent 14 years
U.S. Cl. D6—461

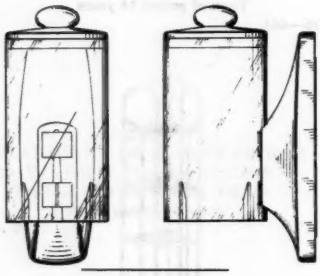
316,196
CORNER SHELF UNIT
Peter M. Y. Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Division of Ser. No. 295,566, Jan. 10, 1989. This application Oct. 30, 1989, Ser. No. 429,191
The portion of the term of this patent subsequent to Mar. 29, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—465

316,197
PIN DISPLAY OR SIMILAR ARTICLE
Jerry Baker, 2716 Laurel Ct., Woodridge, Ill. 60517
Filed Jul. 23, 1987, Ser. No. 76,936
Term of patent 14 years
U.S. Cl. D6—469

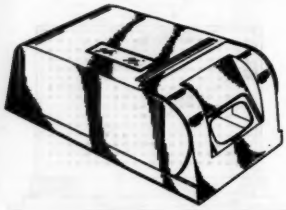


316,198
SHELF UNIT
Peter M. Y. Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Division of Ser. No. 295,566, Jan. 10, 1989. This application Oct. 30, 1989, Ser. No. 428,653
The portion of the term of this patent subsequent to Jun. 26, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—479

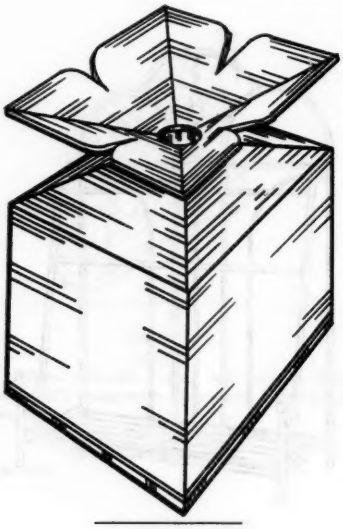
316,199
WALL-MOUNTED CUP DISPENSER
Jerry A. Brown, Greenwood, Ind., assignor to James River Corp. of Virginia, Norwalk, Conn.
Filed Apr. 22, 1988, Ser. No. 184,847
Term of patent 14 years
U.S. Cl. D6—516



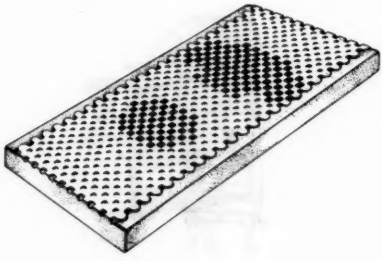
316,200
TISSUE OR TOWEL DISPENSER
Chris R. Dawson, Hassocks, England, assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 22, 1989, Ser. No. 326,843
Term of patent 14 years
U.S. Cl. D6—518



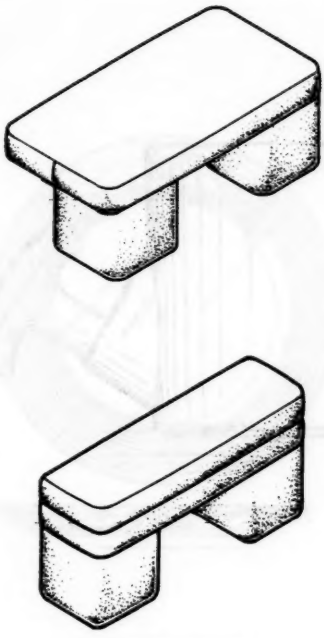
316,201
TOILET TISSUE DISPENSER
Alan Shimasaki, 8035 Shadow Hill Dr., La Mesa, Calif. 92041
Filed May 8, 1989, Ser. No. 348,647
Term of patent 14 years
U.S. Cl. D6—518



316,202
FOAM PAD
David L. Farley, 18672 Evergreen Ave., Yorba Linda, Calif. 92686
Filed Dec. 14, 1988, Ser. No. 284,447
Term of patent 14 years
U.S. Cl. D6—596

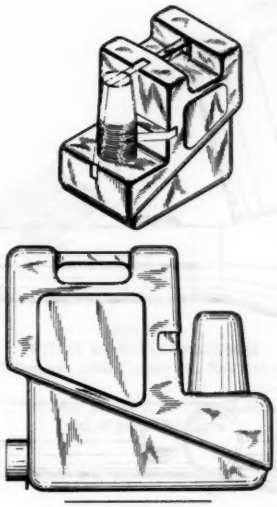


316,203
INFLATABLE CUSHION FOR USE IN THE REAR PASSENGER AREA OF AN AUTOMOBILE
Hsun W. Chao, 11 Fl., No. 703, Chung Cheng rd., Shih Lin, Taipei, Taiwan
Filed Feb. 17, 1989, Ser. No. 312,918
Term of patent 14 years
U.S. Cl. D6—601

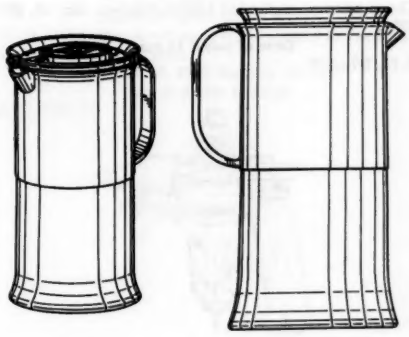


316,204
PILLOW
Carolyn Goodale, 335 Oak St., Westwood, Mass. 02090
Filed May 18, 1989, Ser. No. 354,422
Term of patent 14 years
U.S. Cl. D6—601

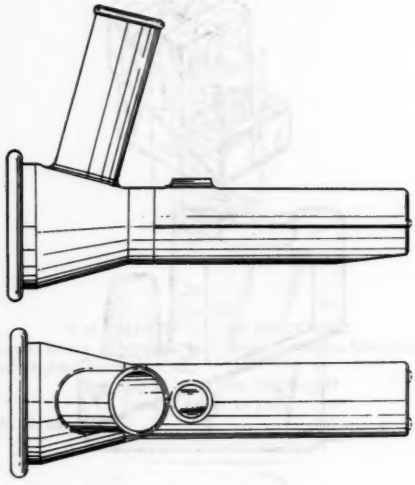
316,205
COMBINED BEVERAGE CONTAINER, DISPENSER AND CUP HOLDER
George R. Conrad, Dunwoody, Ga., assignor to General Electric Company, Mt. Vernon, Ind.
Filed Jun. 8, 1988, Ser. No. 204,489
Term of patent 14 years
U.S. Cl. D7—305



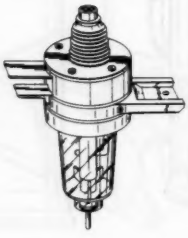
316,206
PITCHER OR THE LIKE
Robert H. C. M. Daenen, Erembodegem, and Pieter J. K. De-Coster, Aalst, both of Belgium, assignors to Dart Industries Inc., Deerfield, Ill.
Filed Feb. 26, 1988, Ser. No. 162,375
Term of patent 14 years
U.S. Cl. D7—317



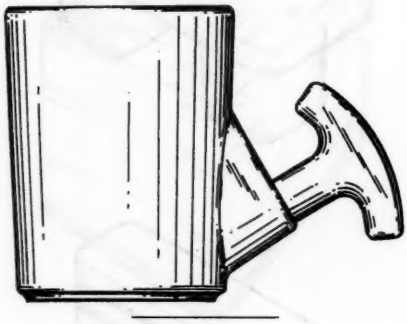
316,207
HAND-HOLDABLE FOOD PROCESSOR
Ira Gaber, West Norwalk, Conn., and Cooper C. Woodring, Plandone, N.Y., assignors to Better Mousetraps Inc., Plandome, N.Y.
Filed Apr. 29, 1988, Ser. No. 187,879
Term of patent 14 years
U.S. Cl. D7—384



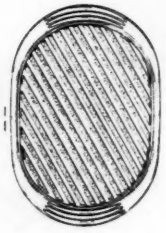
316,208
LIQUID MEASURING-DISPENSER TAP FOR A BEVERAGE BOTTLE OR SIMILAR ARTICLE
Ronald S. Griffiths, Rochester, and John E. Searles, Aylesford, both of England, assignors to R. and A. Bailey & Co. Limited, Dublin, Northern Ireland
Filed Jul. 20, 1987, Ser. No. 75,076
Claims priority, application United Kingdom, Jan. 20, 1987, 1039342
Term of patent 14 years
U.S. Cl. D7—398



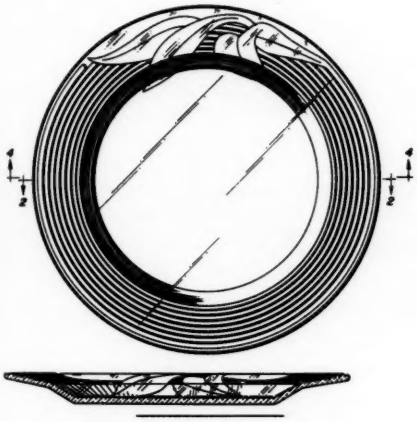
316,209
CUP
Milan S. Lackovic, Port Washington, Wis., assignor to K-Promotions, Inc., Milwaukee, Wis.
Filed Jan. 23, 1989, Ser. No. 299,251
Term of patent 14 years
U.S. Cl. D7—533



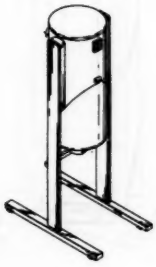
316,210
SERVING TRAY
Giorgetto Giugiaro, Turin, Italy, assignor to Fratelli Guzzini, S.p.A., Recanati, Italy
Filed Jan. 17, 1989, Ser. No. 297,747
Claims priority, application Italy, Aug. 18, 1988, 21751B/88
Term of patent 14 years
U.S. Cl. D7—545



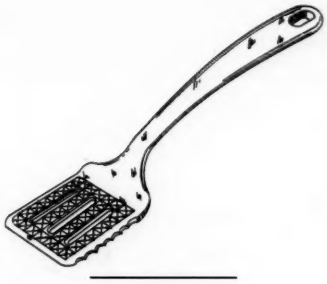
316,211
PLATTER OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute, 62510 Arques, France
Filed Sep. 25, 1986, Ser. No. 911,204
Term of patent 14 years
U.S. Cl. D7—588



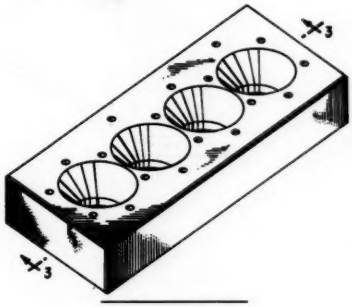
316,212
JUICE EXTRACTOR
John S. Seal, Jr., 208 Llanfair Rd., Ardmore, Pa. 18929
Filed Sep. 22, 1988, Ser. No. 247,579
Term of patent 14 years
U.S. Cl. D7—665



316,213
SPATULA
Robert Skerker, Buffalo, N.Y., and William Prindle, Santa Barbara, Calif., assignors to Robinson Knife Manufacturing Co., Inc., Springville, N.Y.
Filed Dec. 19, 1988, Ser. No. 286,498
Term of patent 14 years
U.S. Cl. D7—696



316,214
PISTON RING COMPRESSOR
Patrick J. O'Donnell, 3040 Connor St., Salt Lake City, Utah 84109
Filed May 13, 1987, Ser. No. 49,081
Term of patent 14 years
U.S. Cl. D8—14



316,215
THUMB FEED GLUE GUN
Richard A. Belanger, Kensington, N.H., assignor to The Stanley Works, New Britain, Conn.
Filed Feb. 29, 1988, Ser. No. 162,365
Term of patent 14 years
U.S. Cl. D8—30

316,216

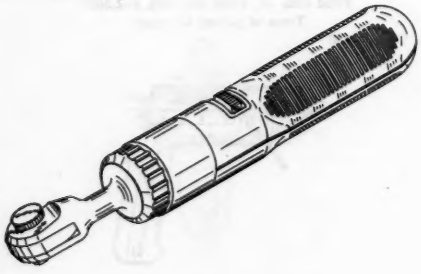
BATTERY-OPERATED RATCHET WRENCH

Martin P. Gierke, Baltimore, and Robert I. Somers, Reisterstown, both of Md., assignors to Black & Decker Inc., Newark, Del.

Continuation-in-part of Ser. No. 907,720, Sep. 12, 1986, Pat. No. D. 304,543. This application Feb. 17, 1988, Ser. No. 157,437

Term of patent 14 years

U.S. Cl. D8—61



316,217

DOOR HARDWARE

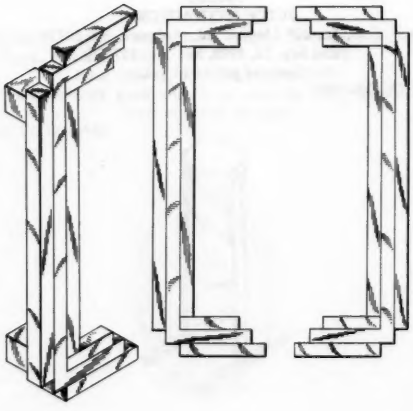
Michael J. Tremonti, Hawthorne, N.J., assignor to Hardware Designs Inc., Fairfield, N.J.

Filed Nov. 22, 1988, Ser. No. 275,032

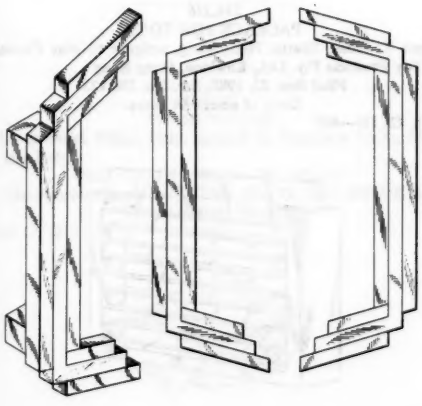
The portion of the term of this patent subsequent to Apr. 16, 2005, has been disclaimed.

Term of patent 14 years

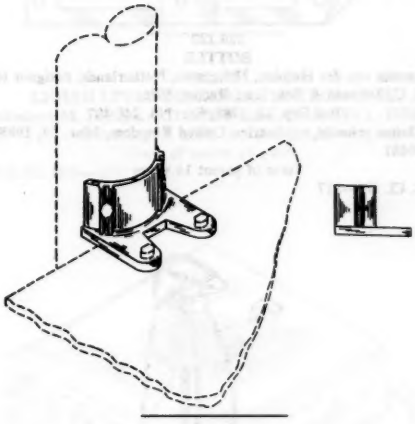
U.S. Cl. D8—319



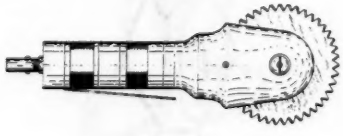
316,218
DOOR HARDWARE
Michael J. Tremonti, Hawthorne, N.J., assignor to Hardware Designs Inc., Fairfield, N.J.
Filed Nov. 22, 1988, Ser. No. 275,033
The portion of the term of this patent subsequent to Apr. 16, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—319



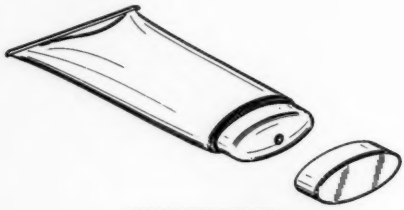
316,219
SUPPORT BRACKET FOR A VERTICAL ARTICLE
Ulrich K. Boehnke, Fort Myers, Fla., assignor to Diemold Machine Company, Inc., Fort Myers, Fla.
Filed Sep. 14, 1988, Ser. No. 245,014
Term of patent 14 years
U.S. Cl. D8—373



316,220
DEHIDING DEVICE
Harrison A. Alley, Jr., Knox County, Tenn.; Lester H. Sirois, Strafford County, N.H., and Lawrence D. Boody, Anderson County, Tenn., assignors to Acraloc Corporation, Oak Ridge, Tenn.
Continuation-in-part of Ser. No. 74,868, Jul. 17, 1987, abandoned. This application Apr. 22, 1988, Ser. No. 184,720
Term of patent 14 years
U.S. Cl. D8—66



316,221
COMBINED COLLAPSIBLE TUBE AND CAP THEREFOR
Edward Dombroski, Sea Girt, N.J., assignor to Peerless Tube Company, Bloomfield, N.J.
Filed Jun. 3, 1986, Ser. No. 870,334
Term of patent 14 years
U.S. Cl. D9—302

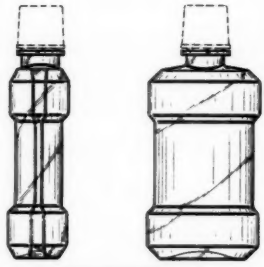


316,222
BOTTLE
Johannes van der Heijden, Hilversum, Netherlands, assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Sep. 22, 1988, Ser. No. 248,407
Claims priority, application United Kingdom, Mar. 24, 1988, 1049461
Term of patent 14 years
U.S. Cl. D9—317

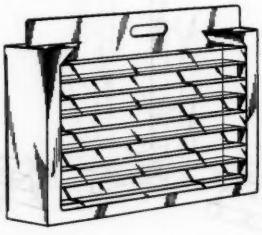
316,223
PERFUME BOTTLE
Pierre Dinand, Levallois-Perret, France, assignor to Lacambra y Espoy, S.A., Barcelona, Spain
Filed Jun. 29, 1987, Ser. No. 67,044
Claims priority, application France, Dec. 30, 1986, 86 6902; Spain, Feb. 9, 1987, 112261
Term of patent 14 years
U.S. Cl. D9—384

316,224
COMBINED BOTTLE AND CAP
Ian Gray, Northumberland; Russell T. Watts, London, and William R. Stewart, Bromley, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Mar. 7, 1988, Ser. No. 165,672
Claims priority, application United Kingdom, Sep. 7, 1987, 1044643
Term of patent 14 years
U.S. Cl. D9—403

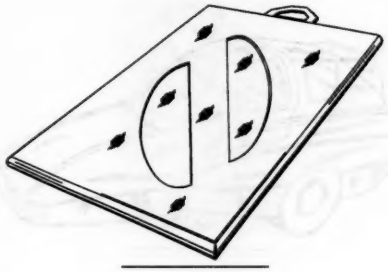
316,225
BOTTLE
Richard C. Edstrom, New York, N.Y.; Richard N. Hirst, Teaneck; Richard B. Gerstman, Tenafly, both of N.J., and David O. Pressler, Fairfield, Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Mar. 22, 1989, Ser. No. 326,959
Term of patent 14 years
U.S. Cl. D9—404



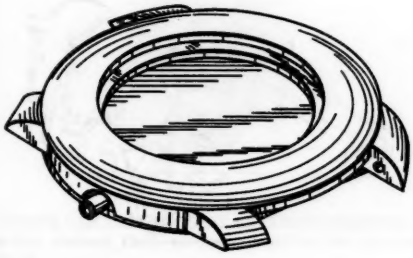
316,226
PACKAGE FOR TOYS
Ngan Y. Ching, Shatin, Hong Kong, assignor to May Cheong Toy Products Fty. Ltd., Kowloon, Hong Kong
Filed Sep. 27, 1988, Ser. No. 250,122
Term of patent 14 years
U.S. Cl. D9—415



316,227
PACKAGE
James J. Gentes, Soquel, and Steven K. Sasaki, Santa Cruz, both of Calif., assignors to Giro Sport Design, Inc., Soquel, Calif.
Filed Oct. 14, 1988, Ser. No. 258,254
Term of patent 14 years
U.S. Cl. D9—415

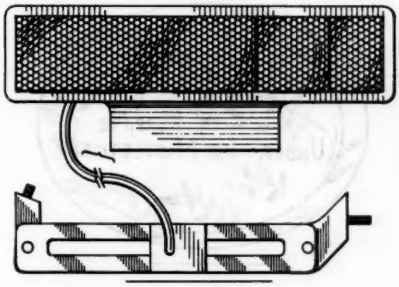


316,228
WATCH CASE
Christian Frommherz, Kowloon, Hong Kong, assignor to Eco Swiss China Time Ltd., Hong Kong, Hong Kong
Filed Mar. 24, 1987, Ser. No. 29,592
Term of patent 14 years
U.S. Cl. D10—30

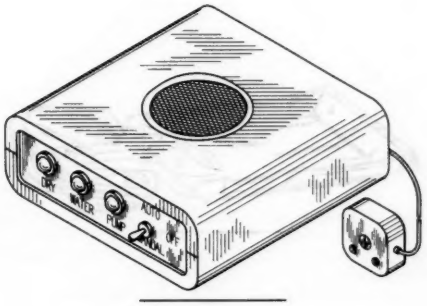


316,229
WRIST-WATCH
Pino Rabolini, Milan, Italy, assignor to Pomellato S.p.A., Milan, Italy
Filed Apr. 19, 1988, Ser. No. 185,770
Claims priority, application Italy, Oct. 23, 1987, 22603/87[U]
Term of patent 14 years
U.S. Cl. D10—30

316,230
AUXILIARY AUTOMOBILE BRAKE LIGHT
Antonio J. Munoz, 103 1st St. E, Unit 310, Tiera Verde, St. Petersburg, Fla. 33715
Filed Jul. 7, 1988, Ser. No. 216,261
Term of patent 14 years
U.S. Cl. D10—114



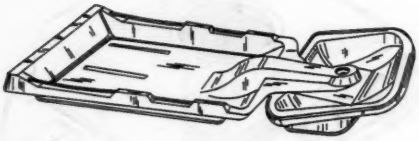
316,231
LIQUID LEVEL DETECTOR CONTROL UNIT
Salvatore M. Inglima, R.D. 1 Box 211A, Chester, N.Y. 10918
Filed Sep. 2, 1988, Ser. No. 240,106
Term of patent 14 years
U.S. Cl. D10—106



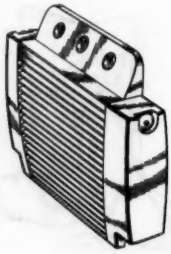
316,232
HOLIDAY STOCKING
Louis T. D'Agosta, 60 Fairfax St., Somerville, Mass. 02144
Filed Oct. 17, 1988, Ser. No. 258,434
Term of patent 14 years
U.S. Cl. D11—126

316,233
BELT BUCKLE
Bobby S. Dupree, and Helen K. Dupree, both of 720 Keppel Dr., Newport News, Va. 23602
Filed Apr. 25, 1988, Ser. No. 185,947
Term of patent 14 years
U.S. Cl. D11—241

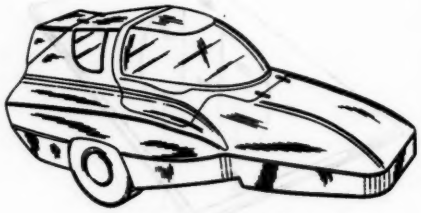
316,234
SLED
Kurt E. P. Mirisch, Sr., P.O. Box 278, Chesterland, Ohio 44026
Filed Dec. 2, 1987, Ser. No. 127,871
Term of patent 14 years
U.S. Cl. D12—11



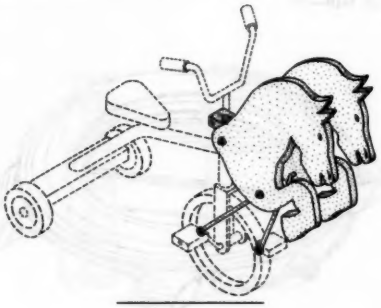
316,235
MOTORCYCLE OIL COOLER
James M. Preisler, 3128 Priest La., Mound, Minn. 55364, and Alwin J. Stahel, 1244 Imperial La., St. Paul, Minn. 55112
Filed Feb. 29, 1988, Ser. No. 162,363
Term of patent 14 years
U.S. Cl. D12—114



316,236
MOTORCYCLE SIDECAR
David E. Hannigan, 2329 Ontario Street, Oakville, Ontario, Canada L6L 1A5
Filed Sep. 30, 1987, Ser. No. 103,161
Claims priority, application Canada, Aug. 21, 1987, 21/08/87
Term of patent 14 years
U.S. Cl. D12—116



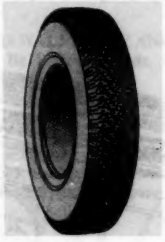
316,237
ANIMATED HORSE FIGURE FOR USE WITH CHILD'S TRICYCLE
James A. Snow, Rte. 3, Gadsden, Ala. 35901
Filed Oct. 5, 1988, Ser. No. 253,728
Term of patent 14 years
U.S. Cl. D12—117



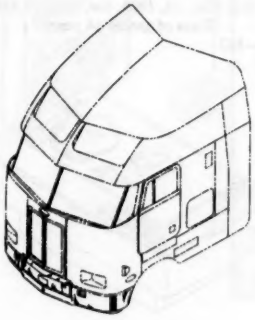
316,238
STROLLER TRAY
Harry J. Giambrone, Kettering, Ohio, assignor to Spalding & Evenflo Companies, Inc., Tampa, Fla.
Filed Oct. 20, 1988, Ser. No. 260,334
Term of patent 14 years
U.S. Cl. D12—133

316,239
AUTOMOBILE TIRE
Toru Tsuda, and Hidenori Masuda, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Dec. 27, 1988, Ser. No. 291,072
Claims priority, application Japan, Aug. 31, 1988, 63-34113
Term of patent 14 years
U.S. Cl. D12—145

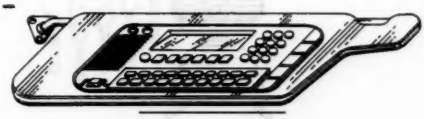
316,240
AUTOMOBILE TIRE
Toru Tsuda, and Yasufumi Ichiki, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jun. 27, 1989, Ser. No. 371,968
Claims priority, application Japan, Dec. 27, 1988, 63-50562
Term of patent 14 years
U.S. Cl. D12—146



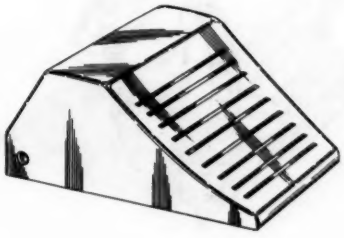
316,241
TRUCK CAB BUMPER UNIT EXTERIOR SURFACE
Bob Ray, Fremont, Calif., assignor to PACCAR Inc., Bellevue, Wash.
Filed Sep. 15, 1988, Ser. No. 245,062
Term of patent 14 years
U.S. Cl. D12—169



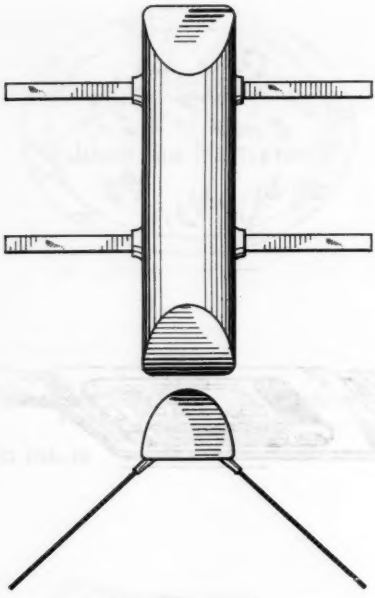
316,242
COMBINED VEHICLE SUN VISOR AND CELLULAR TELEPHONE UNIT
Joe Lewo, P.O. Box N8913, Nassau, The Bahamas
Filed Apr. 29, 1988, Ser. No. 188,009
Term of patent 14 years
U.S. Cl. D12—191



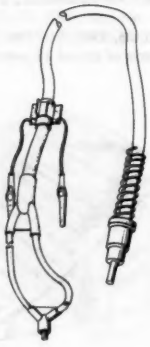
316,243
WHEEL CHOCK
Stephen K. Henry, 3815 Northbrook Dr., #C-21, Boulder, Colo. 80302
Filed Jul. 26, 1988, Ser. No. 224,135
Term of patent 14 years
U.S. Cl. D12—217



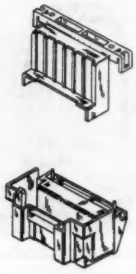
316,244
DOCK POST BUMPER
Kevin D. Kruckenberg, 28681 N. Harrison Ave., Wauconda, Ill. 60084
Filed Dec. 9, 1988, Ser. No. 282,295
Term of patent 14 years
U.S. Cl. D12—168



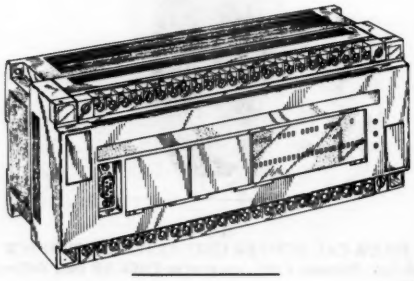
316,245
OPTICAL CABLE ASSEMBLY FOR ATTACHMENT TO A HEADLIGHT UNIT WORN BY A SURGEON
Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., Ronkonkoma, N.Y.
Filed Nov. 21, 1988, Ser. No. 273,505
Term of patent 14 years
U.S. Cl. D13—133



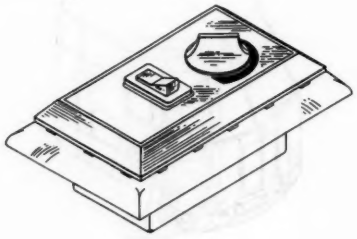
316,246
ELECTRICAL CONNECTOR ASSEMBLY
Yasuharu Moriai, and Osamu Ito, both of Suzuka, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Dec. 21, 1988, Ser. No. 288,003
Claims priority, application Japan, Jun. 21, 1988, 63-24589
Term of patent 14 years
U.S. Cl. D13—133



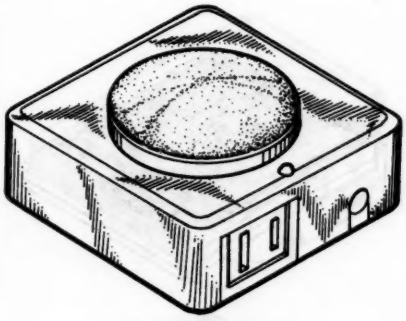
316,247
PROGRAMMABLE MICRO-CONTROLLER
Raymond Llabres, Saint Laurent du Var, and Guy Boucher, Paris, both of France, assignors to La Telemecanique Electrique, France
Filed Jun. 29, 1987, Ser. No. 67,174
Claims priority, application France, Dec. 30, 1986, 86 6896
Term of patent 14 years
U.S. Cl. D13—162



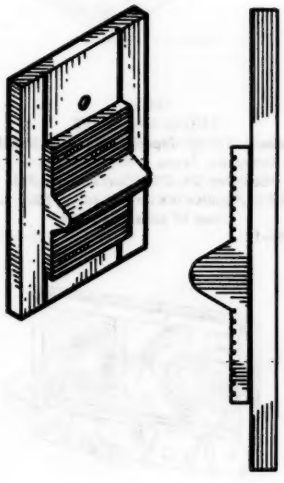
316,248
SINGLE SWITCH ELECTRIC FAN CONTROL
Allan M. Dob, Clifton, N.J., assignor to SSMC Inc., Edison, N.J.
Filed Mar. 24, 1989, Ser. No. 328,356
Term of patent 14 years
U.S. Cl. D13—162



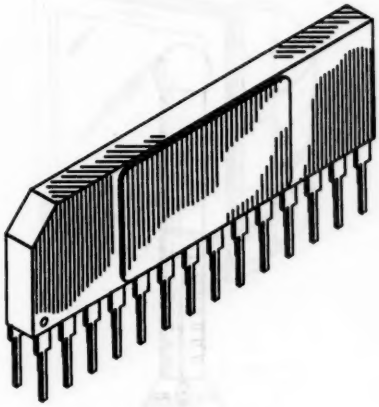
316,249
FOOT OPERATED DIMMER SWITCH
Lee King-Pei, No. 12, Shi Rd., Yow Sh Industy District, Pu Shin, Yang Mei, Teau Euan Shian, Taiwan
Filed Mar. 22, 1989, Ser. No. 327,154
Term of patent 14 years
U.S. Cl. D13—167



316,250
COMBINED WALL PLATE AND SWITCH
Francois Mongeau, Ile Bizard, Canada, assignor to Nicolet Plastique Ltd., Nicolet, Canada
Filed May 18, 1988, Ser. No. 195,575
Claims priority, application Canada, Mar. 28, 1988, 28-03-88-5
The portion of the term of this patent subsequent to Jan. 29, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—170



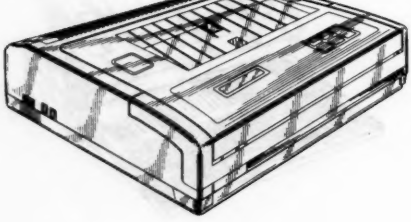
316,251
IN-LINE SEMICONDUCTOR PACKAGE
David Y. Armstrong, San Diego, Calif., assignor to Mosaic Semiconductor, Inc., San Diego, Calif.
Filed Dec. 19, 1988, Ser. No. 287,982
Term of patent 14 years
U.S. Cl. D13—182



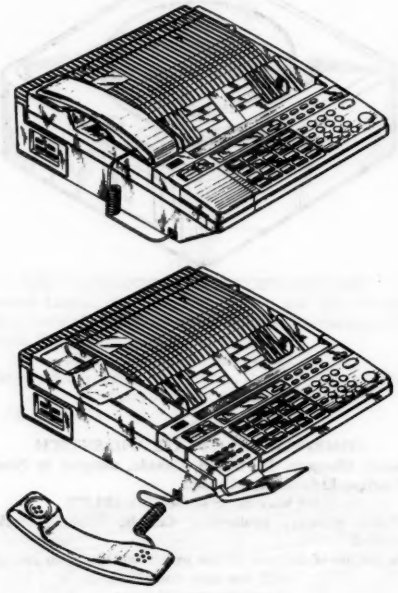
316,252
PORTABLE COMPUTER OR SIMILAR ARTICLE
Hartmut H. Esslinger, Los Gatos; Eric I. Gruenberg, Soquel, and James R. Stewart, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jan. 23, 1989, Ser. No. 299,717
Term of patent 14 years
U.S. Cl. D14—106

316,253
ELECTRONIC SENSOR PEN
Martin P. Riddiford, Stephen O. Frazer, Seamus A. Sharky, all of London, England, assignors to Price, Stern, Sloan, Inc., Los Angeles, Calif.
Filed Jun. 22, 1988, Ser. No. 210,107
Claims priority, application United Kingdom, Dec. 22, 1987, 1047293
Term of patent 14 years
U.S. Cl. D14—114

316,254
FACSIMILE
Kazuo Sato, Causeway Bay, Hong Kong, assignor to Ensilver International Trade Holding Corporation Ltd., Central, Hong Kong
Filed May 23, 1989, Ser. No. 355,382
Claims priority, application United Kingdom, Nov. 24, 1988, 1055194
Term of patent 14 years
U.S. Cl. D14—118



316,255
FACSIMILE TRANSCEIVER
Masaru Yokoyama, Kokubunji; Masahiro Saegusa, Mitaka; Yuuji Kawano, Yokohama; Taichirou Yamashita, Chigasaki, and Hiroshi Endo, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 10, 1989, Ser. No. 392,149
Term of patent 14 years
U.S. Cl. D14—118

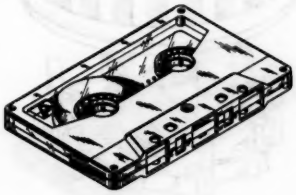


316,256
AUDIO CASSETTE
Fuyuki Yonehara, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 29, 1988, Ser. No. 291,873
Claims priority, application Japan, Jul. 6, 1988, 63-26894
Term of patent 14 years
U.S. Cl. D14—121

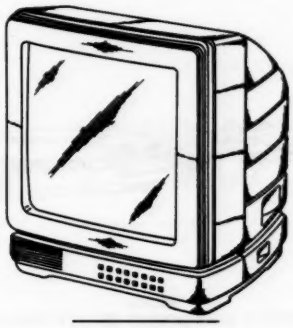
316,257
AUDIO CASSETTE
Fuyuki Yonehara, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 29, 1988, Ser. No. 291,874
Claims priority, application Japan, Jun. 29, 1988, 63-25959
Term of patent 14 years
U.S. Cl. D14—121

316,258
AUDIO CASSETTE
Fuyuki Yonehara, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 29, 1988, Ser. No. 291,875
Claims priority, application Japan, Jun. 29, 1988, 63-25958
Term of patent 14 years
U.S. Cl. D14—121

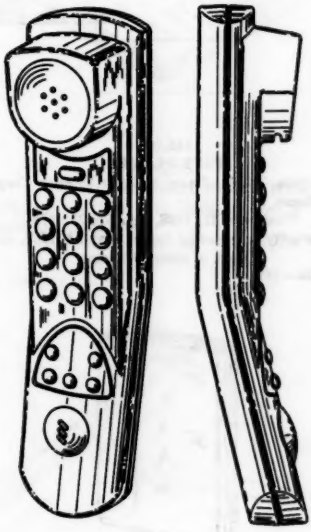
316,259
AUDIO CASSETTE
Fuyuki Yonehara, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 29, 1988, Ser. No. 291,876
Claims priority, application Japan, Jun. 29, 1988, 63-25957
Term of patent 14 years
U.S. Cl. D14—121



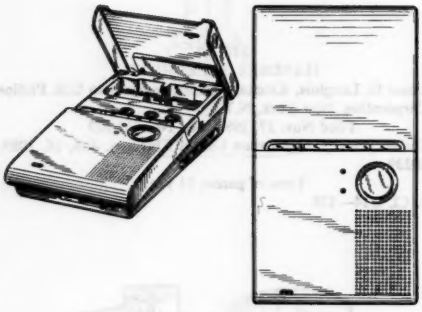
316,260
TELEVISION RECEIVER
Thomas E. Renk, Jr., Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
Filed Aug. 14, 1989, Ser. No. 393,326
Term of patent 14 years
U.S. Cl. D14—126



316,261
HANDSET TELEPHONE
Michael G. Langlois, Kanata, Canada, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 27, 1989, Ser. No. 441,923
Claims priority, application United Kingdom, Jun. 16, 1989, 1060239
Term of patent 14 years
U.S. Cl. D14—138

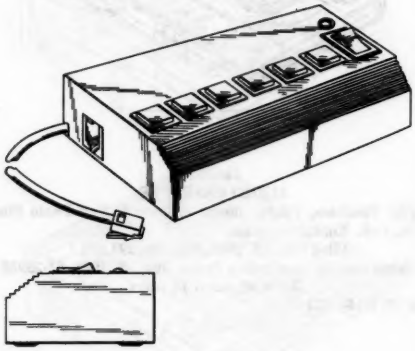


316,262
AUTOMATIC ANSWERING RECORDER FOR TELEPHONE
Fumitaka Kikutani, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 19, 1989, Ser. No. 452,319
Claims priority, application Japan, Jul. 6, 1989, 1-25111
Term of patent 14 years
U.S. Cl. D14—141

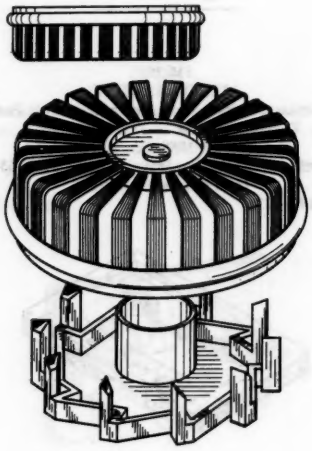


316,263
TAPE PLAYER
Takashi Sogabe, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 21, 1988, Ser. No. 273,878
Claims priority, application Japan, May 23, 1988, 63-20205
Term of patent 14 years
U.S. Cl. D14—165

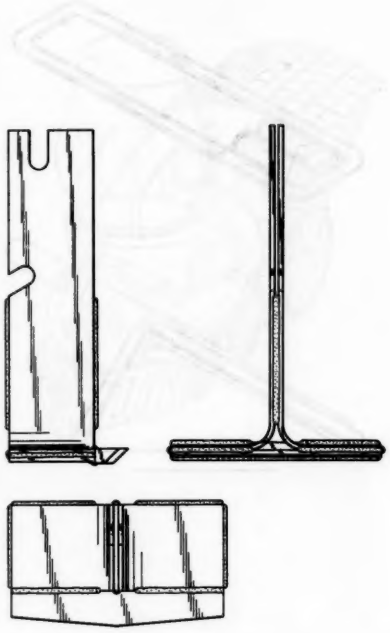
316,264
TELEPHONE SPECIAL EFFECTS UNIT OR SIMILAR ARTICLE
Richard C. Levy, P.O. Box 34828, Bethesda, Md. 20817
Filed Jul. 31, 1989, Ser. No. 387,642
Term of patent 14 years
U.S. Cl. D14—245



316,265
LAWN MOWER BLADE AND BLADE COVER
Ronald Mihatsch, Rte. 3 Box 330D, Temple, Tex. 76501
Filed Feb. 8, 1988, Ser. No. 153,801
Term of patent 14 years
U.S. Cl. D15—17



316,266
SOIL STABILIZER TINE
Delmar D. Edmisson, Guymon, Okla., assignor to Adams Hard-Facing Company, Inc., Guymon, Okla.
Filed Feb. 16, 1988, Ser. No. 156,096
Term of patent 14 years
U.S. Cl. D15—28



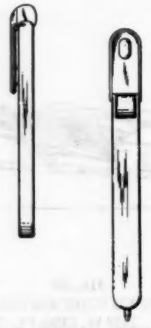
316,267
CALIBRATION CALCULATOR
Frederick A. Miller, Elburn, and Richard A. Valiga, Bartlett, both of Ill., assignors to Spraying Systems Co., Wheaton, Ill.
Filed Jun. 7, 1988, Ser. No. 203,273
Term of patent 14 years
U.S. Cl. D18—7

316,268
AUTOMATIC DOCUMENT FEEDER
Kyushichi Miyajima, deceased, late of Osaka, Japan by Kazu Miyajima, legal representative , and Kiyoshi Hayashi, Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Jun. 22, 1987, Ser. No. 67,903
Claims priority, application Japan, Dec. 26, 1986, 61-51884
Term of patent 14 years
U.S. Cl. D18—42

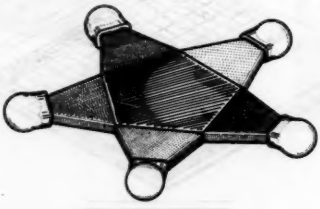
316,269
COMPUTERIZED CHECKBOOK REGISTER
Charles H. Woods, Jr., 2928 W. 135th Pl., Gardena, Calif. 90249
Filed Nov. 17, 1988, Ser. No. 272,297
Term of patent 14 years
U.S. Cl. D19—26

316,270
HAND-HELD FABRIC STRETCHER
William H. Mason, III, St. Paul, Minn., assignor to Uncommon Conglomerates, Inc., Minn.
Filed Feb. 29, 1988, Ser. No. 161,605
Term of patent 14 years
U.S. Cl. D19—35

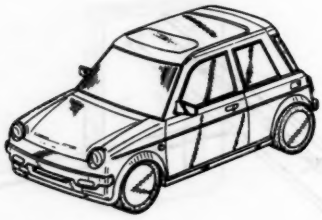
316,271
WRITING INSTRUMENT
Pietro Larizza, Limbiate, Italy, assignor to New Deal S.A.S. di Iliana Ciotti E C., Milan, Italy
Filed Dec. 23, 1987, Ser. No. 137,016
Claims priority, application Italy, Jun. 24, 1987, 21870/87[U]
Term of patent 14 years
U.S. Cl. D19—41



316,272
CRAYON
Genius Lee, No. 25, Lane 380, Sec. 2, Chung-Shan Road, Chung-Ho City, Taipei Hsien, Taiwan
Filed Apr. 14, 1988, Ser. No. 183,531
Term of patent 14 years
U.S. Cl. D19—42

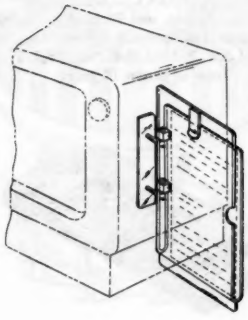


316,273
COMBINED DESK SET AND HOLDER THEREFOR
Shintaro Tsuji, Tokyo, Japan, assignor to Sanrio Company, Ltd., Tokyo, Japan
Filed Apr. 16, 1987, Ser. No. 39,597
Claims priority, application Japan, Oct. 18, 1986, 61-41132
Term of patent 14 years
U.S. Cl. D19—75

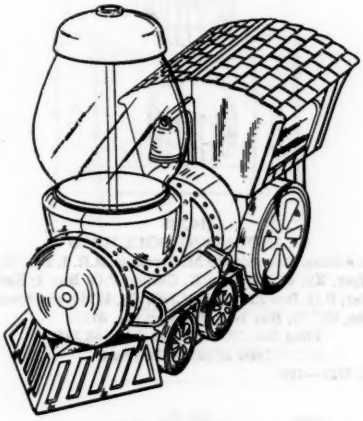


316,274
WRITING INSTRUMENT HOLDER
Kaoru Suzuki, Tokyo, Japan, assignor to Plus Corporation, Tokyo, Japan
Filed Apr. 25, 1988, Ser. No. 185,829
Claims priority, application Japan, Nov. 26, 1987, 62-48359
Term of patent 14 years
U.S. Cl. D19—85

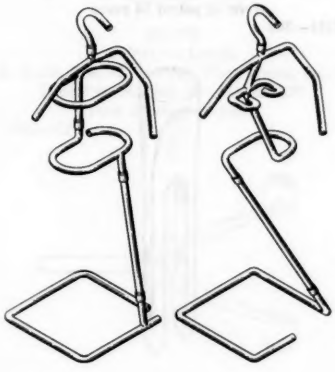
316,275
DOCUMENT HOLDER FOR ATTACHMENT TO A COMPUTER MONITOR
Dale G. Davis, Warren, Mich., and Shane E. Davis, 8228 Paige, Warren, Mich. 48089, assignors to Shane E. Davis, Warren, Mich.
Filed Mar. 18, 1988, Ser. No. 169,775
Term of patent 14 years
U.S. Cl. D19—91



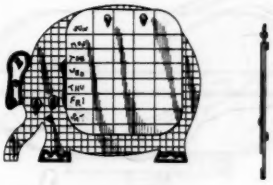
316,276
GUM BALL MACHINE
Bruce A. Weiner, Toronto, Canada, assignor to 493207 Ontario Ltd., Ontario, Canada
Filed Feb. 1, 1989, Ser. No. 305,357
Claims priority, application Canada, Aug. 3, 1988, 0308885
Term of patent 14 years
U.S. Cl. D20—3



316,277
MANNEQUIN FOR DISPLAYING CLOTHES
Gary B. Pollard, 2826 N. Dayna, Santa Ana, Calif. 92701
Filed Jan. 10, 1989, Ser. No. 295,567
Term of patent 14 years
U.S. Cl. D20—31



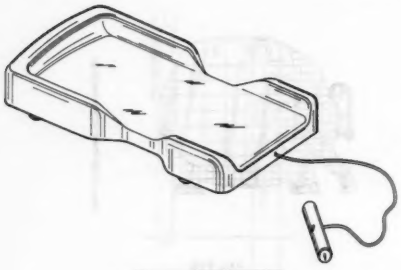
316,278
WALL MOUNTED DISPLAY BOARD FOR CHILDREN'S TOILET TRAINING
Judith A. Cohen, Pittsburgh, Pa., assignor to Michael Cohen, Monroeville, Pa.
Division of Ser. No. 49,415, May 14, 1987, Pat. No. Des. 308,989. This application Feb. 27, 1990, Ser. No. 485,741
Term of patent 14 years
U.S. Cl. D20—39



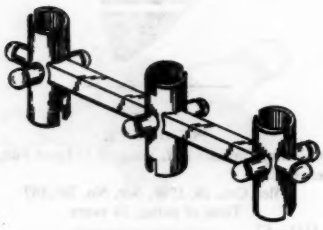
316,279
PROJECTILE GAME PIECE
Jerry A. Reynolds, 1074 N. Ohio St., Arlington, Va. 22205
Filed Jun. 27, 1988, Ser. No. 211,669
Term of patent 14 years
U.S. Cl. D21—2

316,280
POGO STICK
James D. White, Covina, Calif., assignor to Sport Fun, Inc., Los Angeles, Calif.
Filed Oct. 28, 1988, Ser. No. 264,167
Term of patent 14 years
U.S. Cl. D21—67

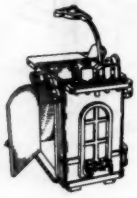
316,281
THERAPEUTIC FOOT EXERCISER
Kurt E. P. Mirisch, Sr., 11279 Caves Rd., Box 278, Chesterland, Ohio 44026
Filed Aug. 28, 1989, Ser. No. 399,284
Term of patent 14 years
U.S. Cl. D21—71



316,282
CONSTRUCTION TOY
Emanuel A. Winston, 1448 Old Skokie Rd., Highland Park, Ill. 60035
Filed Jul. 17, 1989, Ser. No. 380,277
Term of patent 14 years
U.S. Cl. D21—108



316,283
COMBINED TOY BABY CARE CART AND TOOLS THEREFOR
John V. Zaruba, Chicago, Ill.; Peter A. Broadbent, Stockport, Great Britain, and Howard J. Morrison, Riverwoods, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 29, 1988, Ser. No. 149,890
Term of patent 14 years
U.S. Cl. D21—121

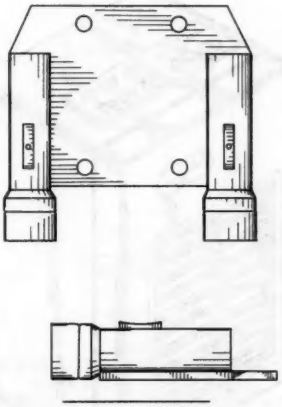


316,284
WHEEL FOR A TOY CAR
Jens N. Knudsen, Billund, Denmark, assignor to Interlego A.G., Switzerland
Filed Nov. 29, 1988, Ser. No. 278,145
Term of patent 14 years
U.S. Cl. D21—141

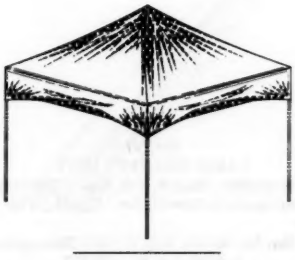
316,285
GRANDPARENT DOLL HEAD
Pauline Adkins, Box 146; Joe M. Brashear, R.R. 1, Box 72, both of Viper, Ky. 41774; John K. Gorley, P.O. Box 1; Ester R. Frazier, P.O. Box 236, both of Jeff, Ky. 41751, and Sondra L. Combs, HC 75, Box 145, Hindman, Ky. 41822
Filed Jan. 25, 1988, Ser. No. 148,226
Term of patent 14 years
U.S. Cl. D21—190

316,286
GOLF TEE
Larry K. Johnson, Rte. 1, Box 1300, Palestine, Tex. 75801
Filed Nov. 15, 1988, Ser. No. 271,764
Term of patent 14 years
U.S. Cl. D21—208

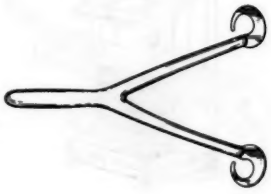
316,287
SKATEBOARD LIGHT
Zoltan D. Incze, 6075 Porter Rd., North Olmsted, Ohio 44070, and Kenneth G. Orwick, 14503 Bayes Ave., Lakewood, Ohio 44107
Filed Oct. 27, 1988, Ser. No. 263,330
Term of patent 14 years
U.S. Cl. D21—224



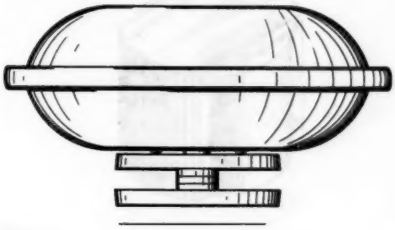
316,288
CANOPY COVER
James P. Lynch, 13 S. Field, Lakewood, Colo. 80226
Filed Oct. 11, 1988, Ser. No. 255,536
Term of patent 14 years
U.S. Cl. D21—253



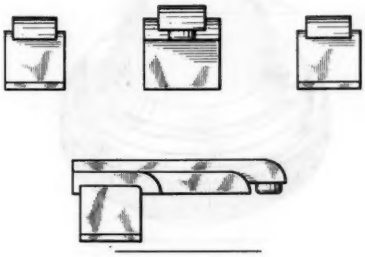
316,289
FISHING LURE
Benny E. Smith, R.R. 32, Box 614, Terre Haute, Ind. 47803
Filed Feb. 16, 1988, Ser. No. 156,225
Term of patent 14 years
U.S. Cl. D22—127



316,290
FLOATING WATER PURIFIER
Lawrence M. Judd, Jr., deceased, late of Honolulu, Hi.; by Martin E. Hsia, administrator. P.O. Box 939, Honolulu, Hi. 96808
Filed May 23, 1990, Ser. No. 528,692
Term of patent 14 years
U.S. Cl. D23—209

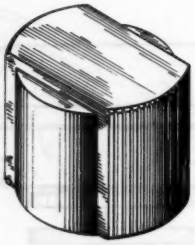


316,291
FAUCET SET
Regina Razumov, San Diego, Calif., assignor to Harden Industries, Inc., Los Angeles, Calif.
Filed Jan. 22, 1988, Ser. No. 146,805
Term of patent 14 years
U.S. Cl. D23—242

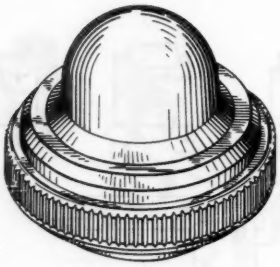


316,292
REPLACEMENT DIAPHRAGM FOR AN IRRIGATION SYSTEM VALVE
John M. Baker, 2918 Cape Dr., Corona, Calif. 91720
Filed Nov. 21, 1988, Ser. No. 273,498
Term of patent 14 years
U.S. Cl. D23—249

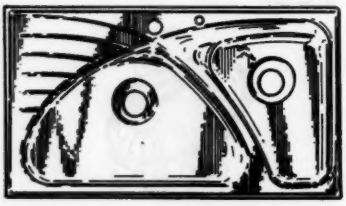
316,293
FAUCET HANDLE OR THE LIKE
Christian Ragonot, Paris, France, assignor to Jacob Delafon, Paris, France
Filed Nov. 30, 1988, Ser. No. 278,312
Claims priority, application France, Sep. 5, 1988, 885475
Term of patent 14 years
U.S. Cl. D23—250



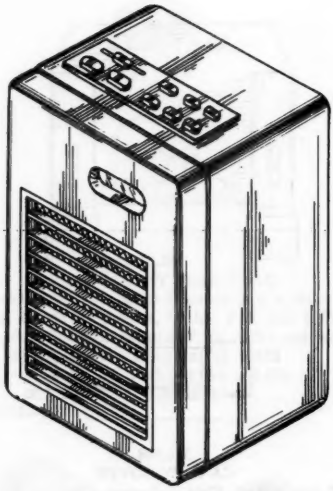
316,294
FAUCET HANDLE OR THE LIKE
Christian Ragonot, Paris, France, assignor to Jacob Delafon, Paris, France
Filed Nov. 30, 1988, Ser. No. 278,314
Claims priority, application France, Sep. 5, 1988, 885472
Term of patent 14 years
U.S. Cl. D23—250



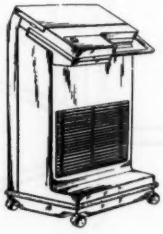
316,295
SINK
Luigi Colani, Fuechtor, Fed. Rep. of Germany, assignor to Niro-Plan AG, Zug, Switzerland
Filed Jun. 5, 1987, Ser. No. 59,673
Term of patent 14 years
U.S. Cl. D23—287



316,296
ELECTRIC HEATER
Wen T. Lee, Tainan, Taiwan, assignor to Chao-Yang Electric Mfg. Co., Ltd., Tainan, Taiwan
Filed Apr. 14, 1989, Ser. No. 337,542
Term of patent 14 years
U.S. Cl. D23—335



316,297
LASER THERAPY UNIT
Alexander Neumeister, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Fed. Rep. of Germany
Division of Ser. No. 46,416, May 4, 1987. This application Feb. 2, 1990, Ser. No. 479,577
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1986, MR 16978
Term of patent 14 years
U.S. Cl. D24—8

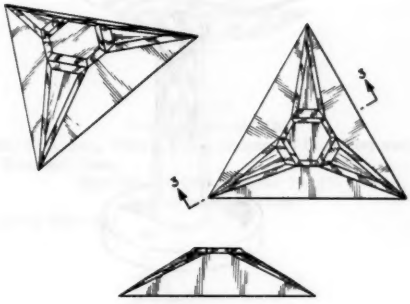


316,298
IMMUNOASSAY TEST KIT OR THE LIKE
James D. Morrow, Oak Park, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.
Filed Nov. 24, 1986, Ser. No. 934,083
The portion of the term of this patent subsequent to Feb. 7, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—17

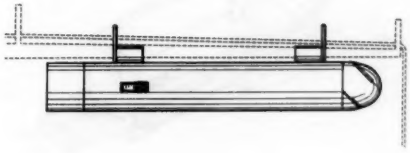
316,299
DESIGN FOR A TRIM EXTRUSION FOR SIDING UNDERSILL AND SOFFIT
George T. Hurlburt, McPherson, Kans., assignor to CertainTeed Corporation, Valley Forge, Pa.
Filed Jul. 17, 1989, Ser. No. 381,001
Term of patent 14 years
U.S. Cl. D25—119

316,300
CHRISTMAS TREE LIGHT
Mary J. Hedges, 9947 E. Coronado, Baton Rouge, La. 70815
Filed Nov. 4, 1988, Ser. No. 267,005
Term of patent 14 years
U.S. Cl. D26—4

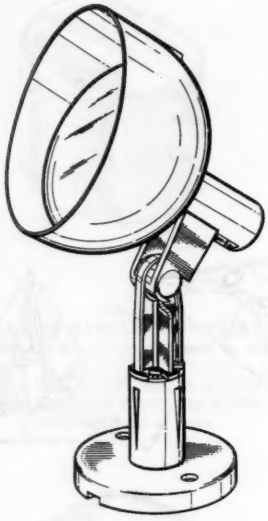
316,301
ELECTROLUMINESCENT LAMP OR SIMILAR ARTICLE
Anthony J. Michael, 8123 Virginia Park, Centerline, Mich. 48015
Filed Nov. 25, 1988, Ser. No. 276,339
Term of patent 14 years
U.S. Cl. D26—24



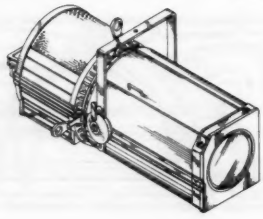
316,302
FISHING POLE LIGHT
George E. Douthitt, 2009 W. Main St., Louisville, Ky. 40203
Filed Aug. 13, 1987, Ser. No. 84,736
Term of patent 14 years
U.S. Cl. D26—46



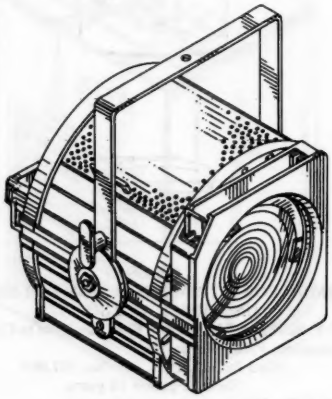
316,303
FLOODLAMP
Clifford J. Layne, Toronto, Canada, assignor to Noma Inc., Scarborough, Canada
Filed Aug. 23, 1988, Ser. No. 235,242
Term of patent 14 years
U.S. Cl. D26—63



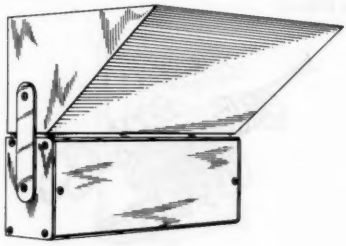
316,304
SPOTLIGHT
Tim Court, London, Great Britain, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed May 11, 1988, Ser. No. 192,821
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1987, BD.10NR.17535
Term of patent 14 years
U.S. Cl. D26—63



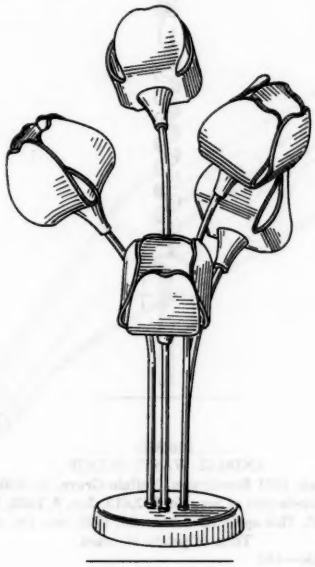
316,305
SPOTLIGHT
Tim Court, London, Great Britain, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed May 11, 1988, Ser. No. 192,823
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1987, BD.10NR.17535
Term of patent 14 years
U.S. Cl. D26—63



316,306
WALL MOUNTED INDIRECT LIGHTING FIXTURE
Sylvan R. Shemitz, Woodbridge, Conn., assignor to Sylvan R. Shemitz Associates, Inc., West Haven, Conn.
Filed Apr. 9, 1987, Ser. No. 36,844
The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—85



316,307
DECORATIVE TABLE LAMP
Ronald Harris, 2827 Woodmene, Northbrook, Ill. 60062, and William Albarran, 10945 S. Kenton, Oaklawn, Ill. 60453
Filed Dec. 31, 1987, Ser. No. 139,934
Term of patent 14 years
U.S. Cl. D26—101

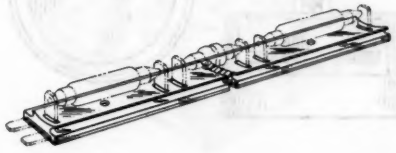


316,308
TABLE LAMP
Jean Clyde-Mason, Hollywood, Calif., assignor to Casablanca Fan Company, Inc., City of Industry, Calif.
Filed Feb. 17, 1987, Ser. No. 15,721
Term of patent 14 years
U.S. Cl. D26—110

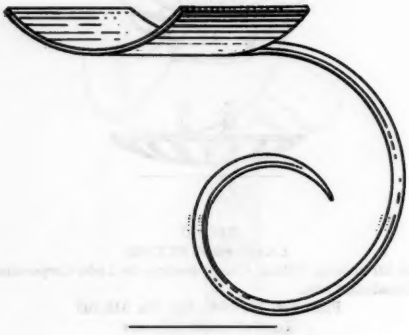
316,309
NIGHT LIGHT COVER
Janet Plymale, New York, N.Y., assignor to Hygiene Industries, New York, N.Y.
Filed Oct. 21, 1988, Ser. No. 261,285
Term of patent 14 years
U.S. Cl. D26—118

316,310
LAMP REFLECTOR
John Stromberg, Wilton, Conn., assignor to Ledu Corporation, Trumbull, Conn.
Filed Feb. 24, 1989, Ser. No. 316,105
Term of patent 14 years
U.S. Cl. D26—131

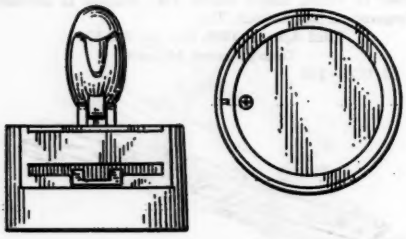
316,311
SUPPORT TRACK FOR A LIGHT STRIP
Herbert D. Freed, Miami Beach, Fla., assignor to Emmanel Corporation, San Antonio, Tex.
Filed Apr. 18, 1989, Ser. No. 340,575
Term of patent 14 years
U.S. Cl. D26—140



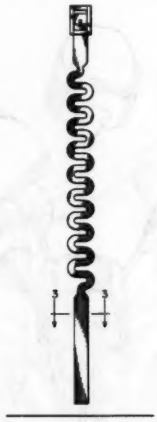
316,312
MASCARA SHIELD
Orlando Córdova, #69 Beadel St., Apt. 4, Brooklyn, N.Y. 11222
Filed Aug. 11, 1989, Ser. No. 392,387
Term of patent 14 years
U.S. Cl. D28—7



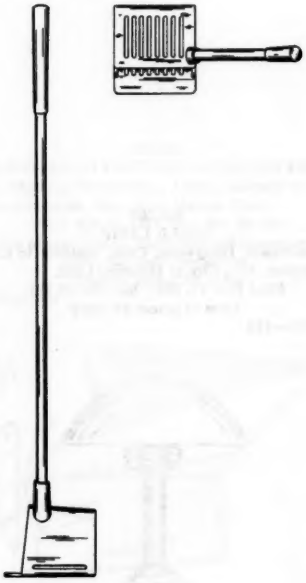
316,313
TOOTHPICK DISPENSER
Hsu C. Pan, 2 Lane 56 TA-Tung St., Tan-TZE 42717, Taiwan
Filed Jul. 5, 1989, Ser. No. 375,619
Term of patent 14 years
U.S. Cl. D28—64



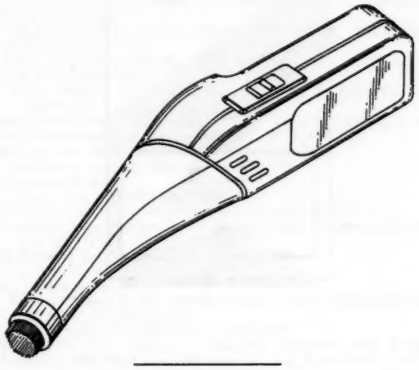
316,314
PET COLLAR OR SIMILAR ARTICLE
Marylee A. Skwirz, 3024 Dyer St., Dallas, Tex. 75205
Division of Ser. No. 161,606, Feb. 29, 1988, Pat. No. Des. 312,712. This application Aug. 22, 1990, Ser. No. 571,421
Term of patent 14 years
U.S. Cl. D30—152



316,315
ANIMAL WASTE SCOOP
Elliott Elrod, 1461 Brandywyn, Buffalo Grove, Ill. 60089
Continuation-in-part of Ser. No. 872,413, Jun. 9, 1986, Pat. No. D. 304,248. This application Mar. 24, 1989, Ser. No. 328,556
Term of patent 14 years
U.S. Cl. D30—162

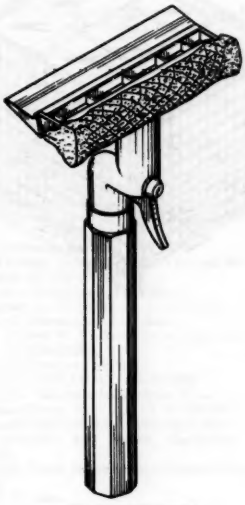


316,316
BATTERY OPERATED VACUUM CLEANER
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Apr. 26, 1990, Ser. No. 514,567
Claims priority, application United Kingdom, Oct. 27, 1989, 2001992
Term of patent 14 years
U.S. Cl. D32—18

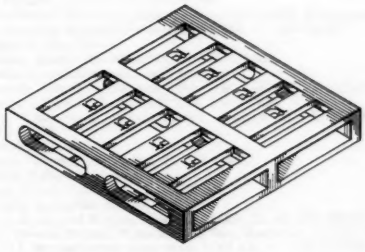


316,317
COMBINED LIQUID DISPENSING ATTACHMENT AND WAND FOR A CARPET CLEANER
Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, N.J.
Continuation-in-part of Ser. No. 282,289, Dec. 9, 1988, abandoned. This application Dec. 14, 1988, Ser. No. 284,449
Term of patent 14 years
U.S. Cl. D32—32

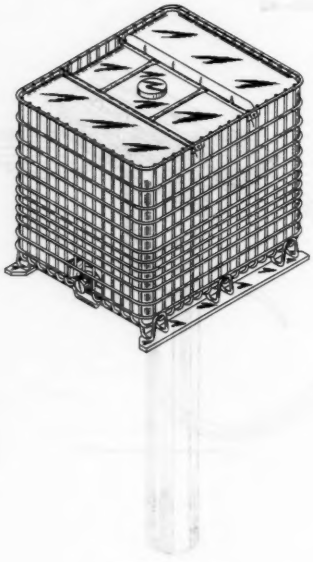
316,318
COMBINED WINDOW WASHER AND FLUID DISPENSING CONTAINER THEREFOR
Chee Keat Cheang, Kowloon, Hong Kong, assignor to ACE Accessories Limited, Kwun Tong, Hong Kong
Filed Mar. 10, 1988, Ser. No. 166,163
Claims priority, application United Kingdom, Sep. 11, 1987, 1044762
Term of patent 14 years
U.S. Cl. D32—42



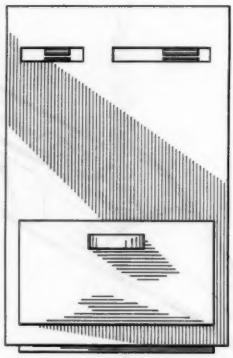
316,319
PALLET
Melvin W. Bathon, R.R. #2, Box 194, Pinckneyville, Ill. 62274
Filed Dec. 5, 1988, Ser. No. 280,286
Term of patent 14 years
U.S. Cl. D34—38



316,320
COMBINED CONTAINER AND PALLET
Georges Roser, Wingen s/Moder, France, assignor to Sotralents S.A., Drulingen, France
Filed Mar. 15, 1989, Ser. No. 324,371
Term of patent 14 years
U.S. Cl. D34—42



316,321
MAIL COLLECTION PROCESSOR
Michael J. Lutz, 6750 Willison Rd., Jackson, Mich. 49201, and Gloria Edmonson, 2345 Ala Wai Blvd. #2708, Honolulu, Hi. 96815.
Filed Sep. 14, 1987, Ser. No. 96,329
Term of patent 14 years
U.S. Cl. D99—33



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF APRIL, 1991

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Nattermann & Cie, GmbH: *See*—
Gunther, Bernd-Rainer; Losch, Rainer; and Steiner, Klaus, 5,008,394, Cl. 548-121.000.

A.R.M.I.N.E.S.: *See*—
Thuez, Jean-Luc; and Dehausse, Robert, 5,007,251, Cl. 62-476.000.

A. Rohe GmbH: *See*—
Staudinger, Alfons; and Bux, Hermann, 5,008,826, Cl. 364-463.000.

A. Schwarz & Co.: *See*—
Schwarz, Anton, 5,007,583, Cl. 237-66.000.

A.T. & T. Paradyne: *See*—
Betts, William L.; and DesRosiers, James J., 5,008,903, Cl. 375-60.000.

Aalvik Thune, Halldis. Supporting device for use in first aid to persons injured in accidents or the like. 5,007,413, Cl. 128-78.000.

Aardvark Clear Mine Limited of Shevock Farm: *See*—
MacWatt, David M., 5,007,325, Cl. 89-1.130.

ABB Atom AB: *See*—
Fredell, Jan, 5,008,069, Cl. 376-299.000.

ABB CEAG Licht- und Stromversorgungstechnik GmbH: *See*—
Liedtke, Heinz; Ploeger, Cornelius; and Gorner, Wilmut, 5,008,792, Cl. 362-374.000.

ABB Power T & D Company, Inc.: *See*—
Petronio, Carlo F., 5,008,525, Cl. 250-214.00C.

Abbott Laboratories: *See*—
Brown, William E., III; Safford, Sarah E.; and Clemens, John M., 5,008,080, Cl. 422-56.000.
Caudill, Vance E., 5,007,232, Cl. 53-426.000.

Abe, Tadashi; Aoki, Masahiro; Takahashi, Tsunenori; and Awata, Takeshi, to Mitsubishi Yuka Badische Co., Ltd. Process for producing aqueous copolymer dispersion from a vinyl monomer mixture. 5,008,329, Cl. 524-798.000.

Abe, Takafumi; Uchiyama, Seiji; Ojima, Takahiro; and Kida, Koichi, to Mitsubishi Gas Chemical Company, Inc. Process for production of 2,6-dimethylnaphthalene. 5,008,479, Cl. 585-320.000.

Abe, Takayuki, to Kabushiki Kaisha Toshiba. Electron beam lithography method and apparatus. 5,008,553, Cl. 250-492.200.

Abekas Video Systems Ltd.: *See*—
Brain, Adrian R., 5,008,755, Cl. 358-183.000.

Abendroth, Paul; Brandes, Harry; and Raab, Rudolf, to MAN Roland Druckmaschinen AG. Air cushion drum or sheet-fed printing presses. 5,007,342, Cl. 101-420.000.

Abou-Issa, Hussein M.: *See*—
Minton, John P.; Webb, Thomas E.; and Abou-Issa, Hussein M., 5,008,291, Cl. 514-578.000.

Abraham, Joseph; Hamonet, Michael; Gracie, Phillip; and Hood, Warwick J. Mast. 5,007,360, Cl. 114-90.000.

Abramczyk, William M.; Hull, Edward I.; and Feustel, James R., to Ford Motor Company. Air bag relief valve. 5,007,662, Cl. 280-739.000.

Abrams, Michael J.: *See*—
Longman, Robert J.; Helfet, Peter R.; and Abrams, Michael J., 5,008,687, Cl. 346-135.100.

Abu Garcia Produktion AB: *See*—
Carlsson, Karl L., 5,007,602, Cl. 242-246.000.

Accatino, Luciano; and Bertin, Giorgio, to CSELT - Centro Studi e Laboratori Telecommunicazioni S.p.A. Dielectric-loaded cavity resonator. 5,008,640, Cl. 333-219.100.

Accumulatorenwerke Hoppecke Carl Zoeliner & Sohn GmbH & Co. KG: *See*—
Schmode, Hans-Peter, 5,008,165, Cl. 429-94.000.

Accumulatorenwerke Hoppecke Carl Zoellner & Sohn GmbH & Co. KG: *See*—
Nelles, Josef, 5,007,467, Cl. 141-1.100.

Ach, William D.; Anderson, Edmund J.; Behrends, Lynn B.; Desrude, Wayne P.; and Klos, Gene J., to Honeywell Inc. Pallet having a sidewall comprising an arcuate surface. 5,007,527, Cl. 198-803.010.

Ackeret, Peter, to Licinvest AG. Sleeve for a photoprint cassette. 5,007,537, Cl. 206-455.000.

Actel Corporation: *See*—
Eltoukhy, Abelshafy A.; and Gluss, David H., 5,008,855, Cl. 365-96.000.

Acushnet Company: *See*—
Brown, Robert A., 5,007,594, Cl. 242-3.000.

Adair, Paul C.: *See*—
Liang, Rong-Chang; Kintz, Karl A.; O'Connor, Joseph G.; and Adair, Paul C., 5,008,237, Cl. 503-212.000.

Adams, Bruce C.: *See*—
Orman, Charles R.; Johnson, Paul E.; and Adams, Bruce C., 5,007,335, Cl. 99-487.000.

Adams, John L., to British Telecommunications public company limited. Communications systems. 5,008,663, Cl. 340-825.500.

Adams, Mark B. Shock absorbing boot and cushioning material. 5,007,111, Cl. 2-22.000.

Adams, Sally E.: *See*—
Kingsman, Alan J.; Kingsman, Susan M.; Adams, Sally E.; Mellor, Elizabeth J. C.; and Malim, Michael H., 5,008,373, Cl. 530-350.000.

Adcock, James L., to Hewlett-Packard Company. Method and apparatus for generating a chirp signal. 5,008,845, Cl. 364-576.000.

Adcock, Marty E.: *See*—
Daly, John K.; Kreinberg, Earl R.; Puerner, Dean A.; and Adcock, Marty E., 5,007,858, Cl. 439-498.000.

Adelmann, John T.: *See*—
Bernhardt, Douglas H.; Matheu, Guillermo R.; Crum, Spencer E.; and Adelmann, John T., 5,007,336, Cl. 99-487.000.

Adkins, Kelvin P., to Imperial Chemical Industries PLC. Electroconductive coating composition. 5,008,134, Cl. 427-386.000.

Advance Combustion Engineering Institute Co., Ltd.: *See*—
Kakegawa, Toshiaki; and Furuhama, Shoichi, 5,007,381, Cl. 123-1.00A.

Advanced Cardiovascular Systems, Inc.: *See*—
Doyle, A. Thomas; Tremulis, William S.; and McQueen, Colleen L., 5,007,434, Cl. 128-772.000.

Advanced Commercial Products, Inc.: *See*—
Olinger, Harvey A., 5,007,448, Cl. 137-223.000.

Advanced Surgical Intervention, Inc.: *See*—
Rosenbluth, Robert F.; Lenker, Jay A.; and Greene, George R., 5,007,898, Cl. 604-54.000.

Advanced Systems Incorporated: *See*—
Pender, Don P., 5,007,445, Cl. 134-122.00R.

Aerospatiale Societe Nationale Industrielle: *See*—
Schwarz, Jean-Claude, 5,007,175, Cl. 33-286.000.

Agency of Industrial Science and Technology: *See*—
Nonaka, Katusnobu; and Sekine, Kazuyoshi, 5,008,620, Cl. 324-213.000.
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Van Thillo, Etienne A.; and Van Gossum, Lucien J., 5,008,178, Cl. 430-527.000.

Agha, Bushra J.: *See*—
Digenis, George A.; and Agha, Bushra J., 5,008,245, Cl. 514-18.000.

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Kennedy, Christopher R.; and Aghajanian, Michael K., 5,007,475, Cl. 164-97.000.
Langensiepen, Ralph A.; Aghajanian, Michael K.; and Wiener, Robert J., 5,007,474, Cl. 164-97.000.
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Ahern, Mark E. Necktie retainer. 5,007,139, Cl. 24-49.00R.

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Ahmed, Mohammed M.: *See*—
Archer, David H.; and Ahmed, Mohammed M., 5,007,988, Cl. 204-153.180.

Ahrens, Uwe: *See*—
Anapliotis, Emmanuel; Regener, Gernot; Ahrens, Uwe; and Jehle, Hermann, 5,007,910, Cl. 606-65.000.

Ahsbahs, Walter; and Leist, Helmut, to Hellige GmbH. Polarographic-/amperometric measuring sensor. 5,007,424, Cl. 128-635.000.

AIL Systems, Inc.: *See*—
Rudish, Ronald M., 5,008,571, Cl. 307-529.000.

Air Products and Chemicals, Inc.: *See*—
Mayotte, Leo G.; and Eleazer, Prince B., 5,007,823, Cl. 432-14.000.
Norman, John A. T., 5,008,415, Cl. 556-32.000.
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Ando, Mitsuhiro, 5,008,946, Cl. 382-2.000.

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Mori, Keiji; and Kogita, Hidekazu, 5,007,722, Cl. 350-382.000.

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Brandstrom, Arne E.; Lindberg, Per L.; and Sunden, Gunnel E., 5,008,278, Cl. 514-338.000.

Akutagawa, Ichiro: *See—*
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Akzo N.V.: *See—*
Diamantoglou, Michael, 5,008,385, Cl. 536-56.000.
Greco, Carl C.; and Triplett, Kelly B., 5,008,420, Cl. 556-182.000.
Telschow, Jeffrey E., 5,008,458, Cl. 568-28.000.

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Davies, Paul M.; and Smith, Raymond A., 5,008,015, Cl. 210-634.000.

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Reutter, Jorg; and Krause, Frank, 5,008,524, Cl. 250-214.00A.

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Edwards, John G.; Han, Wesley W.; and Ali, Yusuf, 5,008,255, Cl. 514-155.000.

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Dulebohn, David H.; and Lindberg, Winston R., 5,007,913, Cl. 606-107.000.

Aldinger, Fritz: *See—*
Gerdau, Thomas; Kleiner, Hans-Jerg; Peuckert, Marcellus; Bruck, Martin; and Aldinger, Fritz, 5,008,423, Cl. 556-412.000.

Alexander, Cleo J.: *See—*
Cavallaro, Nunzio M.; Toth, John F.; and Alexander, Cleo J., 5,008,681, Cl. 343-700.0MS.

Alexander, Joseph H.; Radcliffe, Stanley L.; Robertson, Martin N.; Bator, Eugene A.; and Anderson, John E., to General Tire, Inc. Automatic sidewall servicer. 5,007,315, Cl. 83-72.000.

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Kircher, Dieter; and Schwarzer, Paul, 5,007,687, Cl. 303-113.000.
Toepperwien, Bernd, 5,007,329, Cl. 92-98.00D.

Algra, Gerben P.: *See—*
Erkens, Leonardus J. H.; Algra, Gerben P.; Geurts, Herman J. J. M.; and Gielkens, Hubertus P. A., 5,007,963, Cl. 106-433.000.

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Schlesinger, Robert A.; Hill, Kimuel L.; Ali, Hamid S.; and Watson, Mark E., 5,008,655, Cl. 340-691.000.

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Edwards, John G.; Han, Wesley W.; and Ali, Yusuf, 5,008,255, Cl. 514-155.000.

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Granskog, Roland, 5,007,683, Cl. 299-10.000.

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Unsworth, Peter J.; Merrison, John C.; and Rowan, Timothy M., 5,008,608, Cl. 318-729.000.

Allen, Joyce; and Bonner, Kathy M. Ornamentally-shaped, interfolded paper products. 5,007,558, Cl. 221-48.000.

Allen, Larry M.: *See—*
Neiss, Edward S.; and Allen, Larry M., 5,008,294, Cl. 514-731.000.

Allen, Richard B.; Gibbs, William E.; and Hans, Lynn M., to General Electric Co. Expandable thermoplastic resin beads. 5,008,298, Cl. 521-139.000.

Allenza, Paul; Clifft, Christy G.; and Morrell, Marie J., to UOP. Some novel producers of cyclodextrin glycosyltransferases. 5,008,195, Cl. 435-193.000.

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Moody, Gillian M.; and Rushforth, Christine A., 5,008,089, Cl. 423-121.000.

Allied-Signal Inc.: *See—*
Joy, George C., III; Lester, George R.; and Marinangeli, Richard E., 5,008,090, Cl. 423-212.000.
Kyriakos, Constantinos S.; and Baran, Henri, 5,008,844, Cl. 364-571.050.
Rodgers, Joel E., Sr.; Schmitz, Ambrose J.; and Romig, Alton D., 5,007,179, Cl. 34-22.000.
Steer, John E., 5,007,239, Cl. 60-562.000.

Alps Electric Co., Ltd.: *See—*
Matsuo, Sei, 5,007,783, Cl. 414-222.000.
Yasumi, Yoshiyuki; and Sato, Hiroshi, 5,007,752, Cl. 400-636.000.

Alter, James J.: *See—*
Willey, Jefferson M.; Alter, James J.; and Letellier, Jules P., 5,008,680, Cl. 342-372.000.

Alternative Technologies for Waste, Inc.: *See—*
Manchak, Frank, Jr.; Manchak, Frank E., II; Manchak, Michael E.; and Manchak, Peter J., 5,008,045, Cl. 252-633.000.

Altorfer, Alfred; Wohler, Ernst; and Wynn, Nicholas P., to Rhone-Poulenc Chimie. Liquid/liquid extraction of gallium values from basic aqueous solutions thereof. 5,008,016, Cl. 210-634.000.

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Fang, Que-Tsang; and Wei-Berk, Caroline, 5,008,158, Cl. 428-614.000.

Alverth, Ronald W.; Schumacher, Thomas H.; and Przybylowski, Thaddeus M., to WPC Machinery Corporation. Web plow folding. 5,007,890, Cl. 493-434.000.

AM International Incorporated: *See—*
Chandhoke, Mohanjit S., 5,007,624, Cl. 270-52.000.

Amada Company, Limited: *See—*
Koseki, Ryoji, 5,008,510, Cl. 219-121.700.

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Cunningham, William R.; Amareno, Carmelo S.; and Kayan, Helmut, 5,008,519, Cl. 235-383.000.

Ambos, Stefan, to Conducta Gesellschaft fur Meb- und Regeltechnik mbH & Co. Method and device for processing measured values. 5,007,283, Cl. 73-1.00G.

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Naro, Rodney L.; Csonka, James M.; and Merritt, Michael A., 5,008,074, Cl. 420-578.000.

American Business Seminars, Inc.: *See—*
Cochran, Kirby, 5,007,838, Cl. 434-178.000.

American Cyanamid Company: *See—*
Kameswaran, Venkataraman, 5,008,403, Cl. 548-561.000.

American Maize-Products Company: *See—*
Ammeraal, Robert N., 5,007,967, Cl. 127-46.100.
Hedges, Allan; and Tenbarge, Frank, 5,007,966, Cl. 127-34.000.

American Medical Systems, Inc.: *See—*
Berg, Eric P., 5,007,940, Cl. 623-66.000.

American Ozone Systems, Inc.: *See—*
Batchelor, Douglas R., 5,008,087, Cl. 422-186.220.

American Tobacco Company, The: *See—*
Chumney, Richard D., Jr., 5,007,439, Cl. 131-331.000.

Ametek, Inc.: *See—*
Mathews, Manfred, 5,008,203, Cl. 436-55.000.

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Schuetz, Franz; Brand, Siegbert; Wenderoth, Bernd; Sauter, Hubert; Ammermann, Eberhard; and Lorenz, Cisela, 5,008,438, Cl. 560-55.000.

Amoco Corporation: *See—*
Bathe, Oscar M., 5,008,366, Cl. 528-272.000.
Burnham, Robert D.; and Sussmann, Ricardo S., 5,008,737, Cl. 357-81.000.
Crowe, Christopher; Cordell, Ralph L.; and Kahng, Seun K., 5,007,292, Cl. 73-654.000.
Gallagher, John N., 5,008,861, Cl. 367-59.000.
Riddick, Wayne T.; and Smith, Vincent F., Jr., 5,008,338, Cl. 525-177.000.

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Bakermans, Johannes C. W., 5,007,282, Cl. 72-481.000.
Daly, John K.; Kreinberg, Earl R.; Puerner, Dean A.; and Adcock, Marty E., 5,007,858, Cl. 439-498.000.
Deak, Frederick R.; and Wrisley, David B., Jr., 5,007,842, Cl. 439-66.000.
Defibaugh, George R.; Myers, Earl C., Jr.; and Smith, Steven G., 5,007,862, Cl. 439-607.000.
Goutiere, Alain, 5,007,888, Cl. 439-189.000.
Grabbe, Dimitry G., 5,007,845, Cl. 439-73.000.
Jakobeit, Erich D., 5,007,865, Cl. 439-839.000.
Puerner, Dean A., 5,007,856, Cl. 439-452.000.

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Krueger, Steven D.; and Amundsen, Michael J., 5,008,807, Cl. 364-200.000.

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Tuthill, Michael G., 5,008,671, Cl. 341-136.000.

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Soto, Jorge; Anand, Joginder N.; and Peffley, Richard D., 5,008,325, Cl. 524-504.000.

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Anderson, Duwayne R.; McMahon, Robert W.; and Rosenow, Barry L., to Tektronix, Inc. High resolution optical fault locator. 5,008,545, Cl. 250-358.100.

Anderson, Edmund J.: *See—*
Ach, William D.; Anderson, Edmund J.; Behrends, Lynn B.; Desrude, Wayne P.; and Klos, Gene J., 5,007,527, Cl. 198-803.010.

Anderson, Edward M. Dough dispenser. 5,007,819, Cl. 425-184.000.

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Pesheck, Peter S.; Atwell, William A.; Krawiecki, Madonna M.; and Anderson, George R., 5,008,507, Cl. 219-10.55E.

Anderson, J. Edward C.: *See—*
Jeromson, James R., Jr.; and Anderson, J. Edward C., 5,007,313, Cl. 81-486.000.

Anderson, John E.: *See*—
Alexander, Joseph H.; Radcliffe, Stanley L.; Robertson, Martin N.; Bator, Eugene A.; and Anderson, John E., 5,007,315, Cl. 83-72.000.
Anderson, Larry; Batts, Gregory N.; Purbrick, Malcolm D.; Scriven, Clare E.; and Jones, Stephen A., to Eastman Kodak Company. Polymer compositions. 5,008,358, Cl. 526-292.300.
Anderson, Raymond L., to H. R. Black Company. Apparatus for filtering industrial process liquids. 5,008,007, Cl. 210-111.000.
Anderson, Stephen; Light, David R.; Marks, Cara; and Rastetter, William H., to Genentech, Inc. Ascorbic acid intermediates and process enzymes. 5,008,193, Cl. 435-138.000.
Anderssen, Sverre, to Elkem a/s. Use of manganese oxide in drilling mud and oil well cement slurries. 5,007,480, Cl. 166-292.000.
Anderton, Kenneth: *See*—
Clough, John M.; Godfrey, Christopher R. A.; Heaney, Stephen P.; and Anderton, Kenneth, 5,008,276, Cl. 514-335.000.
Ando Electric Co., Ltd.: *See*—
Hosoda, Takuya; Morishita, Mitsuhiro; and Tamura, Takashi, 5,008,562, Cl. 307-265.000.
Ando, Masao: *See*—
Kobayashi, Hitoshi; Takano, Akira; Narusawa, Naoharu; Tsukada, Yukihiko; Sakamoto, Hiroshi; Hirano, Masaki; and Ando, Masao, 5,008,710, Cl. 355-202.000.
Ando, Mitsuhiro, to Aisin Seiki K.K. System for recognizing image. 5,008,946, Cl. 382-2.000.
Ando, Tomiaki: *See*—
Murayama, Fumio; and Ando, Tomiaki, 5,008,945, Cl. 381-194.000.
Andrejasich, Raymond J.: *See*—
Kidd, Roy E.; Andrejasich, Raymond J.; Michel, Hilary; and Slocum, Laurence S., 5,008,653, Cl. 340-620.000.
Annand, Charles A. Shower curtain liner control device. 5,007,120, Cl. 4-558.000.
Anshal, Inc.: *See*—
Purohit, Ahnal A., 5,007,533, Cl. 206-208.000.
Anson, Fred C.; and Montgomery, Donald D., to California Institute of Technology. Novel polyelectrolyte copolymer and mixed polymers and composites thereof. 5,008,339, Cl. 525-181.000.
Antoon, Mitchell K., Jr.; and Hill, David J., to Hercules Incorporated. Breathable microporous film. 5,008,296, Cl. 521-91.000.
Antunez, Bruce A. Bowl fill for a tank valve. 5,007,452, Cl. 137-441.000.
Aoi, Hajime: *See*—
Nishiyama, Nobumasa; Saito, Makoto; Ouchi, Yasuhide; Katoh, Yasuhiro; Kamo, Yoshihisa; Koizumi, Makoto; Aoi, Hajime; Sato, Naoki; and Tsuchiya, Reijiro, 5,008,761, Cl. 360-45.000.
Aoike, Tatsuyuki: *See*—
Kanai, Masahiro; Aoike, Tatsuyuki; Matsuda, Koichi; and Kawakami, Soichiro, 5,007,971, Cl. 136-258.000.
Aoki, Keiji: *See*—
Taga, Yasunori; Yamadera, Hideya; Aoki, Keiji; and Hattori, Tadashi, 5,008,149, Cl. 428-336.000.
Aoki, Masahiro: *See*—
Abe, Tadashi; Aoki, Masahiro; Takahashi, Tsunenori; and Awata, Takeshi, 5,008,329, Cl. 524-798.000.
Aoki, Satoshi: *See*—
Hagihara, Takeaki; and Aoki, Satoshi, 5,008,012, Cl. 210-321.800.
Aoki, Toshihiro, to Casio Computer Co., Ltd. Method for manufacturing a color filter. 5,008,166, Cl. 430-7.000.
Aoshima, Syozo; Hirota, Kunio; Sakakibara, Hiroshi; Sawai, Naoyuki; and Sato, Takeaki, to Brother Kogyo Kabushiki Kaisha. Plastic working method and apparatus. 5,007,281, Cl. 72-406.000.
Aoyagi, Toru: *See*—
Itami, Takashi; Yuri, Tadao; and Aoyagi, Toru, 5,007,214, Cl. 52-66.000.
Aoyama, Motoo; Koyama, Junichi; Uchikawa, Sadao; Bessho, Yasunori; Ozawa, Michihiro; Nakamura, Mitsunari; Nakajima, Akinobu; and Maruyama, Hiromi, to Hitachi, Ltd. Fuel assembly. 5,008,070, Cl. 376-419.000.
Aoyama, Seigi: *See*—
Mizuniwa, Seiji; Hattori, Akio; Kurihara, Tooru; Aoyama, Seigi; and Nakamura, Konichi, 5,007,979, Cl. 156-605.000.
Aoyama, Teruo: *See*—
Kawashima, Kouzo; Morikawa, Takao; Aoyama, Teruo; and Kamiya, Akira, 5,008,331, Cl. 525-84.000.
Apollo Computer, Inc.: *See*—
Markinson, Scott; Schuster, Michael; and Hogan, Thomas, 5,008,636, Cl. 331-2.000.
Appels, Johannes A.; and Maas, Henricus G. R., to U.S. Philips Corporation. Method of manufacturing a semiconductor device including outdiffusion from polysilicon rims. 5,008,209, Cl. 437-31.000.
Appleton Papers Inc.: *See*—
Mushinski, Roger J.; Lewis, Charles E.; and Casey, Lawrence J., 5,007,538, Cl. 206-523.000.
Applied Food Processors, Inc.: *See*—
Barrett, Lawrence G., 5,008,550, Cl. 250-453.100.
Applied Medical Technology, Inc.: *See*—
Picha, George J.; and Secrest, Dean J., 5,007,900, Cl. 604-106.000.
Arahara, Kozo: *See*—
Koizumi, Norihiko; Tanioka, Hiroshi; Toyama, Noboru; Arahara, Kozo; and Yuasa, Toshiya, 5,008,690, Cl. 346-140.00R.
Arai, Kiyotaka; Sumoto, Hirofumi; and Ichinomiya, Keizi, to Nichia Kagaku Kogyo K.K. Fluorescent lamp having ultraviolet reflecting layer. 5,008,789, Cl. 362-255.000.
Arai, Seiji, to Kabushiki Kaisha Toshiba. Laser generator for producing modulating data therefor. 5,008,685, Cl. 346-108.000.
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Hashimoto, Akira; and Arai, Shunji, 5,008,600, Cl. 315-370.000.
Arai, Takaki: *See*—
Yaginuma, Nakatsugu; and Arai, Takaki, 5,008,078, Cl. 422-56.000.
Arao, Kozo: *See*—
Nakagawa, Katsumi; Ishihara, Shunichi; Kanai, Masahiro; Murakami, Tsutomu; Arao, Kozo; Fujioka, Yasushi; and Sakai, Akira, 5,008,726, Cl. 357-30.000.
Arao, Masachika. Four valve per cylinder engine head. 5,007,387, Cl. 123-90.022.
Araujo, Richard K.: *See*—
Dahlen, John M.; Chhabra, Narender K.; Araujo, Richard K.; Scholten, James R.; Reid, Robert W.; and Soikkeli, Matti, 5,007,285, Cl. 73-170.00A.
Araujo, Roger J., to Corning Incorporated. Essentially colorless silver-containing glasses through ion exchange. 5,007,948, Cl. 65-30.130.
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Jackson, Douglas M.; and Arbie, John A., Sr., 5,007,181, Cl. 34-57.00R.
Archer, David H.; and Ahmed, Mohammed M., to Westinghouse Electric Corp. Method for determining the concentration of a plurality of combustible gases in a stream. 5,007,988, Cl. 204-153.180.
Archibald, Frank S., to United States of America, Navy. Low noise sonar support system. 5,008,863, Cl. 367-165.000.
Arimoto, Shinobu, to Canon Kabushiki Kaisha. Image processing system. 5,008,949, Cl. 382-41.000.
Aristech Chemical Corporation: *See*—
Brownell, George L.; Hays, Mary K.; and Sivak, Andrew J., 5,008,421, Cl. 556-406.000.
Armanini, Louis, to Mearl Corporation, The. Decorative objects with multi-color effects. 5,008,143, Cl. 428-207.000.
Armbruster, Joseph M. Plastic wrap dispenser. 5,007,319, Cl. 83-488.000.
Armonier, Ulrich: *See*—
Steinel, Heinrich-Wolfgang; Armonier, Ulrich; and Schulze-Froehlich, D-F, 5,008,613, Cl. 324-133.000.
Armstrong, Rosa: *See*—
Bentz, Hanne; Ellingsworth, Larry; and Armstrong, Rosa, 5,008,240, Cl. 514-2.000.
Armstrong World Industries, Inc.: *See*—
Reichwein, David P., 5,008,906, Cl. 378-54.000.
Arndt, Horst; and Kroetsch, Edward S., to Unitron Industries Ltd. Modular hearing aid with lid hinged to faceplate. 5,008,943, Cl. 381-68.600.
Arndts, Dietrich: *See*—
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; Hoefke, Wolfgang; Arndts, Dietrich; and Streller, Ilse, 5,008,273, Cl. 514-301.000.
Arney, Rodney L.: *See*—
McKenna, Frank J.; Horst, Richard K.; Horst, James F.; and Arney, Rodney L., 5,007,772, Cl. 406-39.000.
Arnulf, Paul: *See*—
Girault, Eric; and Arnulf, Paul, 5,007,656, Cl. 280-615.000.
Artzt, Peter; and Mueller, Heinz, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Process for the production of a yarn from fiber material. 5,007,136, Cl. 19-65.00A.
Arzoian, John: *See*—
Lemon, Robert W.; and Arzoian, John, 5,007,309, Cl. 74-869.000.
Asada, Toshiyuki, to Toyota Jidosha Kabushiki Kaisha. Planetary gear transmission for motor vehicle. 5,007,887, Cl. 45-284.000.
Asahi Chemical Co., Ltd.: *See*—
Utsunomiya, Masayuki; Fujita, Shigeo; Nozawa, Toshiyuki; and Kamiyama, Morihiro, 5,008,401, Cl. 548-455.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Nakagishi, Toshio, 5,008,876, Cl. 369-244.000.
Takahashi, Nagashige; and Ouchi, Teruo, 5,007,406, Cl. 128-4.000.
Asahi Medical Co., Ltd.: *See*—
Hagihara, Takeaki; and Aoki, Satoshi, 5,008,012, Cl. 210-321.800.
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Ozaki, Seishiro; Asahi, Nobuo; and Ebisawa, Tsuneo, 5,008,504, Cl. 200-401.000.
Asai, Yasuo: *See*—
Takeuchi, Masamichi; and Asai, Yasuo, 5,007,747, Cl. 384-450.000.
Asakawa, Toshifumi; and Nakayama, Haruo, to Ricoh Company, Ltd. Multi-plate optical signal processing apparatus with inter-plate optical communication. 5,008,554, Cl. 250-551.000.
Asakura, Hiroyuki: *See*—
Iida, Masanori; Hagiwara, Kiyokazu; Asakura, Hiroyuki; Nishioka, Minoru; and Murase, Koichi, 5,007,709, Cl. 350-162.220.
Asami, Tadao: *See*—
Kume, Toyohiko; Goto, Toshio; Kamochi, Atsumi; Yanagi, Akihiko; Miyauchi, Hiroshi; and Asami, Tadao, 5,007,952, Cl. 71-73.000.
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Asaoka, Masaharu, to Kayaba Industry Co. Ltd. Hydraulic control system. 5,007,459, Cl. 137-625.650.
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Gustafsson, Par; Sobel, Jarl; and Ornholmer, Lars, 5,007,295, Cl. 73-862.690.
Asher, David J. Touch controller. 5,008,497, Cl. 178-18.000.
Ashida, Tetsuya; and Noda, Touru, to Mitsubishi Paper Mills Limited. Photographic support with an undercoating layer on a resin coated base sheet. 5,008,150, Cl. 428-340.000.

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Astier, Marc: *See—*
Penitot, Gerard; Cartigny, Marcel; Roynard, Joel; Valdenaire, Bruno; Astier, Marc; Mery, Bernard; and Wendling, Michael, 5,007,447, Cl. 137-102.000.

AT&T Bell Laboratories: *See—*
Bar-Joseph, Israel; Chang, Tao-Yuan; and Chemla, Daniel S., 5,008,717, Cl. 357-16.000.
Burns, William F., 5,008,777, Cl. 361-412.000.
Carver, Gary E.; Koos, Gregory L.; and Michalski, John D., 5,007,741, Cl. 356-448.000.
Case, Christopher J.; Cheung, Kin P.; Liu, Ruichen; Schutz, Ronald J.; and Wagner, Richard S., 5,008,217, Cl. 437-195.000.
Cimini, Leonard J., Jr.; and Habbab, Isam M. I., 5,008,958, Cl. 455-619.000.
Cooper, Robert C., 5,008,644, Cl. 336-192.000.
Gawrys, George W.; Oberman, Richard A.; and Willcock, William T., 5,008,930, Cl. 379-210.000.
Harris, Dawn E.; and Orr, William H., 5,007,520, Cl. 194-317.000.
Karol, Mark J., 5,008,881, Cl. 370-85.150.
Leedy, Harold G., 5,008,672, Cl. 341-138.000.
Roberts, Thomas J., 5,008,935, Cl. 380-29.000.

Atlas Copco Construction and Mining Holding AB: *See—*
Forsyth, Allen P., 5,007,599, Cl. 242-86.510.

Atlas Industries A/S: *See—*
Fosbol, Peder; Ullum, Henrik; and Korremann, Birgitte, 5,008,375, Cl. 530-357.000.

Atlas Powder Company: *See—*
Trapp, Richard E.; Hansen, Gary L.; Clay, Robert B.; Dubetsky, Lawrence J.; and Olney, Robert S., 5,007,973, Cl. !49-109.600.

Atriss, Ahmad H.: *See—*
Hanke, Carl C.; Obregon, Carlos D.; and Atriss, Ahmad H., 5,008,635, Cl. 331-1.00A.

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Audaire, Luc; Peuzin, Jean C.; and Schaub, Bernard, to Commissariat a l'Energie Atomique. Monolithic detection or infrared imaging structure and its production process. 5,008,541, Cl. 250-338.300.

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Kirschner, Kraig A., 5,007,603, Cl. 248-59.000.

AVIA koncern: *See—*
Brychta, Jaroslav; Lutisan, Eduard; and Jirkovsky, Vladimir, 5,007,394, Cl. 123-279.000.

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Duran, John A., 5,007,762, Cl. 403-341.000.

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Critchlow, David N.; Yehushua, Moshe; Avis, Graham M.; Heimbigner, Wade L.; Johnson, Karle J.; and Wiley, George A., 5,008,900, Cl. 375-8.000.

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Witt, Hans-Hinrich, 5,007,902, Cl. 604-117.000.

B. F. Goodrich Company, The: *See—*
Kinson, Philip L.; and Faber, Edward M., 5,008,145, Cl. 428-288.000.
Magistro, Angelo J., 5,008,225, Cl. 502-73.000.
Orndorff, Roy L., Jr.; and Bono, Mark J., 5,007,660, Cl. 280-715.000.

Baba, Shigenori: *See—*
Miida, Takashi; Ozaki, Nozomu; Baba, Shigenori; and Kousaka, Kunimitsu, 5,008,696, Cl. 354-408.000.

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Tang, Sang T., 5,007,872, Cl. 445-25.000.

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Babitzka, Rudolf, to Robert Bosch GmbH. Hydraulic control device for fuel injection systems of internal combustion engines. 5,007,400, Cl. 123-506.000.

Bacchetti, Mario: *See—*
Corain, Luciano; Maitan, Gianni; Perlini, Renato; and Bacchetti, Mario, 5,007,463, Cl. 139-448.000.

Bach, Hanswilhelm: *See—*
Breitkopf, Norbert; Dambkes, Georg; and Bach, Hanswilhelm, 5,008,473, Cl. 568-868.000.

Bacus, James W., to Cell Analysis Systems, Inc. Methods and apparatus for the quantitation of nuclear proteins. 5,008,185, Cl. 435-7.230.

Badesha, Santokh S.: *See—*
Yu, Robert C. U.; and Badesha, Santokh S., 5,008,169, Cl. 430-59.000.

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Badylak, Stephen F.; Geddes, Leslie A.; and Wessale, Jerry L., to Purdue Research Foundation. Muscle-powered cardiac assist device. 5,007,927, Cl. 623-3.000.

Baer, Thomas M.: *See—*
Kafka, James D.; and Baer, Thomas M., 5,008,887, Cl. 372-6.000.

Bailey, Carey G. Wrench for metal tubing connectors. 5,007,312, Cl. 81-426.500.

Bain, Richard L.; and Larson, John R., to Resource Technology Associates. Apparatus for thermal treatment of a hydrocarbon stream. 5,008,085, Cl. 422-109.000.

Bair, Kenneth W., to Burroughs Wellcome Co. Certain substituted naphthofurans with anti-tumor properties. 5,008,286, Cl. 514-468.000.

Baird, Thomas E.: *See—*
Lackner, John R.; Grzywna, Stanley E.; Weber, Ralph A.; and Baird, Thomas E., 5,007,133, Cl. 15-351.000.

Baird, William E.: *See—*
Gaylord, Thomas K.; Glytsis, Elias N.; Moharam, M. Gamal; and Baird, William E., 5,007,708, Cl. 350-162.200.

Baker Hughes Incorporated: *See—*
Ciaffoni, James L., 5,008,009, Cl. 210-193.000.
Enright, Dorothy P.; Dye, William M.; Smith, F. Martin; and Perricone, Alphonse C., 5,007,489, Cl. 175-65.000.

Baker, John W. Drill head assembly for cranial perforators. 5,007,911, Cl. 606-80.000.

Baker, Timothy J.; and Woods, John H., to Petrolite Corporation. Overprint aqueous varnish. 5,008,144, Cl. 428-211.000.

Bakermans, Johannes C. W., to AMP Incorporated. Stamping and forming machine having interchangeable punch sub-assembly. 5,007,282, Cl. 72-481.000.

Bakhshi, Shiv K., to Owens-Corning Fiberglas Corporation. Method and apparatus for impregnating a porous substrate with foam. 5,008,131, Cl. 427-209.000.

Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponacz, Anna; Eifert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo ; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, to Budapesti Vegyimuvek. Herbicide composition. 5,008,440, Cl. 560-65.000.

Balckeurr Aktiengesellschaft: *See—*
Podhorsky, Miroslan, 5,007,165, Cl. 29-888.100.

Ball, Hans-Klaus, to Erwin Sick GmbH Optik-Elektronik. Autocollimation light curtain. 5,008,530, Cl. 250-221.000.

Ball, James H.; and Gardner, Willis W., to Delaware Capital Formation, Inc. Low flow tilting pad thrust bearing. 5,007,745, Cl. 384-307.000.

Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., to British Petroleum Company p.l.c., The. Proton-catalyzed reactions catalyzed by hydrogen ion-exchanged layered clays. 5,008,465, Cl. 568-697.000.

Bally, Marcel B.: *See—*
Cullis, Pieter R.; Hope, Michael J.; and Bally, Marcel B., 5,008,050, Cl. 264-4.300.

Balmer, Oskar: *See—*
Focke, Heinz; and Balmer, Oskar, 5,007,522, Cl. 198-468.800.

Balogh, Mark A. Portable outrigger assembly. 5,007,362, Cl. 114-123.000.

Bandru, Gregory M.: *See—*
Lauks, Imants R.; Wieck, Henry J.; and Bandru, Gregory M., 5,008,616, Cl. 324-158.00F.

Banerjee, Chandra K.: *See—*
Robinson, Amy L.; and Banerjee, Chandra K., 5,007,440, Cl. 131-369.000.

Bang, Gary M.: *See—*
Real, Kenneth G.; and Bang, Gary M., 5,007,630, Cl. 272-69.000.

Banks, George: *See—*
Suzuki, Arata; Tyberg, William T.; Banks, George; and Suzuki, Marcia, 5,007,427, Cl. 128-659.000.

Bar-Joseph, Israel; Chang, Tao-Yuan; and Chemla, Daniel S., to AT&T Bell Laboratories. Semiconductor device including cascaded modulation-doped quantum well heterostructures. 5,008,717, Cl. 357-16.000.

Baran, Henri: *See—*
Kyriakos, Constantinos S.; and Baran, Henri, 5,008,844, Cl. 364-571.050.

Barancik, Martin B.; and Teutsch, Erich O., to General Electric Company. Apparatus for thermoplastically shaping polymeric resins. 5,007,818, Cl. 425-144.000.

Barbett, Betty G. Termite control system. 5,007,197, Cl. 43-124.000.

Barbone, Norman K., to Implant Plastics Corporation. Buttress channel. 5,007,833, Cl. 433-172.000.

Bard, John K.; and Burnier, Julia S., to Hercules Incorporated. Organosilicon materials. 5,008,360, Cl. 528-25.000.

Barito, Thomas R.: *See*—
Fraser, Howard H., Jr.; and Barito, Thomas R., 5,007,810, Cl. 417-410.000.

Barker, James E.; and Cash, Timothy J., to General Signal Corporation. Valve and actuator apparatus allowing multiposition relationship. 5,007,613, Cl. 251-58.000.

Barnett, Charles J.; and Wilson, Thomas M., to Eli Lilly and Company. Enantioselective synthesis of antifolates. 5,008,391, Cl. 546-243.000.

Baroi, Stefan. Receptacles designed to enable their juxtaposition. 5,007,551, Cl. 220-23.400.

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Kelly, Christopher J.; and Lewis, Keith L., 5,007,689, Cl. 350-1.600.

Barrett, Lawrence G., to Applied Food Processors, Inc. Conveyor system for irradiated food products. 5,008,550, Cl. 250-453.100.

Bartelt, Robert J.; and Dowd, Patrick F., to United States of America, Agriculture. Aggregation pheromones of the nitridulid beetles *Carpophilus hemipterus, Carpophilus lugubris,* and *Carpophilus freemani.* 5,008,478, Cl. 585-16.000.

Bartizal, Dennis C.; and Campagna, Anthony J., to Minnesota Mining and Manufacturing Company. Resilient semi-rigid orthopedic support devices. 5,007,418, Cl. 128-90.000.

Basel, Rainer: *See*—
Henneberger, Hans; and Basel, Rainer, 5,008,058, Cl. 264-134.000.

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Aumueller, Alexander; Neumann, Peter; and Trauth, Hubert, 5,008,312, Cl. 524-92.000.
Bueschl, Rainer; and Klaerner, Peter, 5,008,341, Cl. 525-216.000.
Diessel, Paul; Perner, Johannes; Denzinger, Walter; Hartmann, Heinrich; and Raubenheimer, Hans-Juergen, 5,008,032, Cl. 252-174.240.
Ditrich, Klaus; Hamprecht, Gerhard; Wuerzer, Bruno; Meyer, Norbert; Westphalen, Karl-Otto; and Laatsch, Hartmut, 5,007,954, Cl. 71-90.000.
Eichenauer, Ulrich, 5,008,472, Cl. 568-730.000.
Fischer, Rolf; Frank, Juergen; Merger, Franz; and Weyer, Hans-Juergen, 5,008,408, Cl. 549-429.000.
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Sendhoff, Norbert; and Freudenberg, Enrique, 5,008,321, Cl. 524-378.000.
Huebner, Dietmar; Nagel, Peter; Hirschberg, Ekkehard; Schoettle, Klaus; and Pavelka, Bozidar, 5,007,536, Cl. 206-394.000.
Ittemann, Peter; Simon, Georg N.; Heinz, Gerhard; Zeiner, Hartmut; Buchert, Hermann; and Seibring, Joachim, 5,008,364, Cl. 528-172.000.
Koehler, Hermann; Ebel, Klaus; Karn, Helmut; and Taubitz, Christof, 5,008,398, Cl. 548-342.000.
Naeumann, Fritz; and Hickmann, Eckhard, 5,008,461, Cl. 568-322.000.
Schuetz, Franz; Brand, Siegbert; Wenderoth, Bernd; Sauter, Hubert; Ammermann, Eberhard; and Lorenz, Cisela, 5,008,438, Cl. 560-55.000.
Schulz, Guenter; and Sauter, Hubert, 5,008,446, Cl. 560-254.000.
Spang, Peter; Neumann, Peter; Wagenblast, Gerhard; and Trauth, Hubert, 5,008,397, Cl. 548-331.000.

BASF Australia Ltd.: *See*—
Donenfeld, Henry; and Lemanis, Eduard, 5,008,239, Cl. 503-227.000.

BASF Corporation: *See*—
Harris, Paul J.; and Wojcik, Ronald T., 5,008,334, Cl. 525-109.000.

Basic, John N., Sr. Incinerator improvements. 5,007,353, Cl. 110-212.000.

Bass, Wayne R.: *See*—
Doan, Phong D.; Upton, James E.; Hess, Douglas N.; Bass, Wayne R.; and Ufford, Keith A., 5,007,435, Cl. 128-784.000.

Bassi, Pawan K.; Eastwell, Kenneth C.; Goudey, James S.; and Spencer, Mary E., to University of Alberta, Governors of the. Method for purifying air. 5,008,091, Cl. 423-245.100.

Bastian, Udo: *See*—
Kleiner, Hans-Jerg; Gersdorf, Joachim; and Bastian, Udo, 5,008,426, Cl. 558-82.000.

Baston, Peter J. Apparatus for facilitating the internal inspection and repair of large pressure vessels. 5,007,501, Cl. 182-128.000.

Batcheller, Barry D.: *See*—
Brekkestran, Kevin L.; and Batcheller, Barry D., 5,008,517, Cl. 219-211.000.

Batchelor, Douglas R., to American Ozone Systems, Inc. Ozone generator apparatus and method. 5,008,087, Cl. 422-186.220.

Bathe, Oscar M., to Amoco Corporation. Process for producing adhesives from polyethylene terephthalate. 5,008,366, Cl. 528-272.000.

Bator, Eugene A.: *See*—
Alexander, Joseph H.; Radcliffe, Stanley L.; Robertson, Martin N.; Bator, Eugene A.; and Anderson, John E., 5,007,315, Cl. 83-72.000.

Batts, Gregory N.: *See*—
Anderson, Larry; Batts, Gregory N.; Purbrick, Malcolm D.; Scriven, Clare E.; and Jones, Stephen A., 5,008,358, Cl. 526-292.300.

Baturay, Omar; Shirk, James E.; and Sigerson, Adam L., to Chrome Technology Inc. Method for removing chromium from chromium containing waste material. 5,007,960, Cl. 75-743.000.

Bauer, George C. Eye drop applicator. 5,007,905, Cl. 604-295.000.

Baumann, Bernd: *See*—
Poelsler, Wolf-Dieter; and Baumann, Bernd, 5,008,843, Cl. 364-571.020.

Baumann, Gerhard: *See*—
Amann, Markus-Christian; Baumann, Gerhard; Heinen, Jochen; and Thulke, Wolfgang, 5,008,893, Cl. 372-50.000.

Baxendale, Andrew: *See*—
Higgins, Ian; and Baxendale, Andrew, 5,008,159, Cl. 428-614.000.

Baxter International Inc.: *See*—
McCartney, Ronald L., 5,007,704, Cl. 350-96.210.

Bayer Aktiengesellschaft: *See*—
Claussen, Uwe; and Krock, Friedrich W., 5,007,942, Cl. 8-506.000.
Franckowiak, Gerhard; Stoltefuss, Jurgen; Bechem, Martin; Gross, Rainer; Kayser, Michael; Hebisch, Siegbert; and Schramm, Matthias, 5,008,279, Cl. 514-354.000.
Heywang, Gerhard; and Jonas, Friedrich, 5,008,430, Cl. 558-396.000.
Klausener, Alexander; Kleefeld, Gerd; Berg, Dieter; Dutzmann, Stefan; and Hanbler, Gerd, 5,008,275, Cl. 514-334.000.
Kruger, Bernd-Wieland; Sasse, Klaus; Hoever, Franz-Peter; Nentwig, Gunther; and Behrenz, Wolfgang, 5,008,261, Cl. 514-212.000.
Mormann, Werner; Brahm, Barbara; and Brahm, Martin, 5,008,447, Cl. 560-355.000.
Muller, Michael; Podszun, Wolfgang; and Winkel, Jens, 5,008,436, Cl. 560-26.000.
Thurm, Siegfried; Holm, Reimer; Leuschke, Christian; Rathmann, Dietrich; and Schrader, Lutz, 5,008,148, Cl. 428-336.000.

Bayerlein, Jorg; Hecker, Eric; Hoeck, Peter; and Milani, Francesco, to Dragerwerk Aktiengesellschaft. Mobile intensive care unit. 5,007,688, Cl. 312-7.200.

Beach, Wayne H.; and Shirk, Steven D., to Kennametal Inc. Trenching tool assembly with dual indexing capability. 5,007,685, Cl. 299-91.000.

Beacon Manufacturing Company: *See*—
Owenby, Daniel B., 5,007,125, Cl. 5-486.000.

Beasley, John C.; and Dinand, Pierre F., to Stuart Jacobson Associates, Inc. Personal care package. 5,007,540, Cl. 206-581.000.

Beauregard, Robert: *See*—
Laberge, Raymond; and Beauregard, Robert, 5,007,108, Cl. 2-2.000.

Bechem, Martin: *See*—
Franckowiak, Gerhard; Stoltefuss, Jurgen; Bechem, Martin; Gross, Rainer; Kayser, Michael; Hebisch, Siegbert; and Schramm, Matthias, 5,008,279, Cl. 514-354.000.

Beck, Horst-Philipp; Emig, Gerhard; Wiesgickl, Gunther; Burg, Karlheinz; and Muck, Karl-Friedrich, to Hoechst Aktiengesellschaft. Process for the preparation of formaldehyde. 5,008,463, Cl. 568-487.000.

Beck, James M., to Creative Packaging Corp. Biased hinge cap. 5,007,555, Cl. 220-339.000.

Becker, Reinhard: *See*—
Urbach, Hansjorg; Henning, Rainer; Teetz, Volker; Geiger, Rolf; Becker, Reinhard; and Gaul, Holger, 5,008,400, Cl. 548-452.000.

Becton, Dickinson and Company: *See*—
Mersch, Steven H., 5,008,556, Cl. 250-560.000.

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Schmidt, Hans-Fr.; Rauchmaul, Siegfried; and Bednarz, Juergen, 5,008,496, Cl. 174-254.000.

Beecham Group p.l.c.: *See*—
Bywater, Robert J.; and Dupe, Robert J., 5,008,248, Cl. 514-23.000.

Beer, Klaus: *See*—
Maathuis, Antonnis G.; Spielmann, Jurgen; Beer, Klaus; and Oare, Thomas R., 5,007,974, Cl. 156-117.000.

Beha, Johannes G.: *See*—
Ahmadi, Hamid; Beha, Johannes G.; Denzel, Wolfgang E.; Engbersen, Antonius P.; Luijten, Ronald P.; Murphy, Charles A.; and Port, Erich, 5,008,878, Cl. 370-60.000.

Behling, Rolf; and Koster, Wolfgang, to U.S. Philips Corporation. X-ray tube with an electron shielding ridge on the cathode. 5,008,917, Cl. 378-140.000.

Behrends, Lynn B.: *See*—
Ach, William D.; Anderson, Edmund J.; Behrends, Lynn B.; Desrude, Wayne P.; and Klos, Gene J., 5,007,527, Cl. 198-803.010.

Behrenz, Wolfgang: *See*—
Kruger, Bernd-Wieland; Sasse, Klaus; Hoever, Franz-Peter; Nentwig, Gunther; and Behrenz, Wolfgang, 5,008,261, Cl. 514-212.000.

Bekki, Katsutoshi; Kondo, Kazuo; Shibata, Yoshimasa; and Niwa, Shigeo, to NGK Spark Plug Co., Ltd. Artificial bone joint. 5,007,932, Cl. 623-18.000.

Bell, William: *See*—
Siret, Patrice J.; Jung, Frederick H.; and Bell, William, 5,008,259, Cl. 514-202.000.

Bellis, Peter D.; and Nesselrode, Frederick, to Mallory, Inc. Fuel pump. 5,007,806, Cl. 417-360.000.

Beltrop, Herbert, to Krupp Polysius AG. Sample cassette. 5,008,922, Cl. 378-208.000.

Bender, Kelly M., to Mikros U.S.A., Inc. Ankle brace. 5,007,417, Cl. 128-80.00H.

Bender, Paul E.; Lantos, Ivan; McGuire, Michael A.; Pridgen, Lendon N.; and Winicov, Herbert B., to SmithKline Beckman Corporation. Compounds for preparing 6-phenyl-2,3-dihydroimidazo[2,1-b]-thiazoles and corresponding thiazines. 5,008,390, Cl. 546-199.000.

Benecke, Arnold G.; Kinne, Daniel J.; and Wnuk, Andrew J., to Procter & Gamble Company, The. Storage-stable transdermal patch. 5,008,110, Cl. 424-448.000.

Bengtson, Fred G.; and LoPiccolo, Donald V., to Superlite Builders Supply, Inc. Masonry block wall system and method. 5,007,218, Cl. 52-204.000.

Bentham, Martin F.: *See*—
Maier, William H.; and Bentham, Martin F., 5,008,004, Cl. 208-321.000.

Bentz, Hanne; Ellingsworth, Larry; and Armstrong, Rosa, to Collagen Corporation. Method of treating inflammation. 5,008,240, Cl. 514-2.000.

Beppu, Osamu; Moribe, Toshihiro; Tezuka, Youjiro; and Chuma, Akira, to Hitachi, Ltd. Magnetic disk enclosure with detachable stator. 5,008,573, Cl. 310-67.00R.

Berczes, Zsolt, to Diaber AG. Apparatus for exposing the reinforcing bars of reinforced concrete pillars. 5,007,593, Cl. 241-264.000.

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Klausener, Alexander; Kleefeld, Gerd; Berg, Dieter; Dutzmann, Stefan; and Hanbler, Gerd, 5,008,275, Cl. 514-334.000.

Berg, Eric P., to American Medical Systems, Inc. Injectable polymeric bodies. 5,007,940, Cl. 623-66.000.

Berger, Frank M. Process for the treatment of the skin to alleviate skin diseases arising from contact sensitization or irritation utilizing p-substituted phenoxy alkanols. 5,008,293, Cl. 514-718.000.

Bergey, James L.: *See*—
Grover, Gary J.; and Bergey, James L., 5,008,284, Cl. 514-423.000.

Bergman, Norman J.: *See*—
O'Dea, Kevin J.; Bergman, Norman J.; Digiulio, Peter C.; Dolan, Donald T.; and Vanderpool, James L., 5,007,371, Cl. 118-680.000.

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Dahle, Olof; and Fischbach, Manfred, 5,007,487, Cl. 175-57.000.

Berkowitz, Yehuda; Hi, Gavriel M.; and Mizrahi, Yehuda. Fluid flow control device. 5,007,453, Cl. 137-458.000.

Bernacchi, Donald B.; Loewe, Robert J.; and Immel, Donna L., to Griffith Laboratories Worldwide, Inc. Storage stable, readily reconstituted comestible. 5,008,121, Cl. 426-89.000.

Bernadiner, Mikhail; and Zhizhin, Vladimir V. Method of combustion neutralization of liquid waste products. 5,008,098, Cl. 423-659.000.

Bernard, Philippe; and Colaitis, Marie-Jean, to Centre National d'Etudes des Telecommunications. High definition television signal processing including subsampling and motion compensation. 5,008,746, Cl. 358-133.000.

Bernardet, Henri; and Pauwels, Jean-Claude, to U.S. Philips Corporation. Vacuum arc sources of ions. 5,008,585, Cl. 313-231.310.

Bernath, Stanley: *See*—
Dunagan, John E.; and Bernath, Stanley, 5,007,199, Cl. 49-13.000.

Bernhardt, David A. Finger insert for a bowling ball. 5,007,640, Cl. 273-63.00A.

Bernhardt, Douglas H.; Matheu, Guillermo R.; Crum, Spencer E.; and Adelmann, John T., to Meat Processing Service Corporation. Apparatus for treating slaughtered animals. 5,007,336, Cl. 99-487.000.

Bernier, Richard E.: *See*—
Yee, Edgar; and Bernier, Richard E., 5,008,499, Cl. 200-50.00C.

Berning, Lloyd G.: *See*—
Meier, Louis M.; and Berning, Lloyd G., 5,007,681, Cl. 297-440.000.

Berninger, John F.: *See*—
Marcus, Jerald J.; and Berninger, John F., 5,007,458, Cl. 137-625.500.

Bernstein, Joel E., to GalenPharma, Inc. Composition for treating nasal disorders and headaches. 5,008,289, Cl. 514-535.000.

Bertagni, Jose J. Integrated sound and video screen. 5,007,707, Cl. 350-118.000.

Bertin, Giorgio: *See*—
Accatino, Luciano; and Bertin, Giorgio, 5,008,640, Cl. 333-219.100.

Bertino, Anne M.: *See*—
Denbow, Nancy A.; and Bertino, Anne M., 5,007,115, Cl. 2-208.000.

Bertrand, Michel P.; Bucher, Michel B.; and Delclaux, Andre R., to Sat(Societe Anonyme de Telecommunications. System for determining the position of at least one target by triangulation. 5,008,543, Cl. 250-342.000.

Besancon, Andre : *See*—
Pinard, Jean C.; Jacquard, Bernard; and Besancon, Andre , 5,008,828, Cl. 364-474.280.

Beshay, Alphons D. Polymer composites based cellulose-V. 5,008,310, Cl. 524-13.000.

Bessho, Yasunori: *See*—
Aoyama, Motoo; Koyama, Junichi; Uchikawa, Sadao; Bessho, Yasunori; Ozawa, Michihiro; Nakamura, Mitsunari; Nakajima, Akinobu; and Maruyama, Hiromi, 5,008,070, Cl. 376-419.000.

Beta Instrument Company Limited: *See*—
Kyriakis, John, 5,008,514, Cl. 219-155.000.

Beth, Matthias; Binz, Hansgeorg; and Toerner, Ludger, to Carl Schenck AG. Dosing or feeding apparatus for precisely feeding loose bulk material. 5,007,564, Cl. 222-217.000.

Betts, William L.; and DesRosiers, James J., to A.T. & T. Paradyne. Adaptive transmit pre-emphasis for digital modem computed from noise spectrum. 5,008,903, Cl. 375-60.000.

Betz Laboratories, Inc.: *See*—
Conlan, John T.; and Whitekettle, Wilson K., 5,008,023, Cl. 210-764.000.

Bewley, David R.; Brimelow, Christopher J. B.; and Wright, Kenneth W., to Nestec S.A. Food processing method. 5,008,123, Cl. 426-509.000.

Bex, Philip A.: *See*—
Najafi-Sani, Mohammad; and Bex, Philip A., 5,008,513, Cl. 219-121.690.

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Carmello, Robert; and Miller, Richard D., 5,008,029, Cl. 252-91.000.
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Crumley, Gary B., 5,008,897, Cl. 373-11.000.
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Smith, Todd S., 5,007,931, Cl. 623-23.000.

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Doscher, Patrisha A., 5,007,969, Cl. 134-38.000.
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Orndorff, Roy L., Jr.; and Bono, Mark J., 5,007,660, Cl. 280-715.000.

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Chari, Krishnan; Bowman, Wayne A.; and Thomas, Brian, 5,008,179, Cl. 430-546.000.

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Abendroth, Paul; Brandes, Harry; and Raab, Rudolf, 5,007,342, Cl. 101-420.000.

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Messinger, Werner; Trolltsch, Karl; and Tewes, Bernd, 5,007,168, Cl. 30-43.000.

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Broughton, George L.; Breckenfeld, Paul W.; Mate, David W.; Nettles, James A.; and Rogers, Duane E., 5,007,393, Cl. 123-195.00R.

Bredovskis, Atis. Tire retainer for dock. 5,007,609, Cl. 248-303.000.

Breitkopf, Norbert; Dambkes, Georg; and Bach, Hanswilhelm, to Ruhrchemie Aktiengesellschaft. Process for purifying propanediol-1,3. 5,008,473, Cl. 568-868.000.

Brekkestran, Kevin L.; and Batcheller, Barry D., to Environwear, Inc. Electrically heated form-fitting fabric assembly. 5,008,517, Cl. 219-211.000.

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Uuskallio, Arvo F., 5,007,573, Cl. 227-139.000.

Bright, Jeffrey D.: *See—*
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Brink, James E.: *See—*
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Chadha, Rajan, 5,007,697, Cl. 350-96.150.
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Teasdale, James A., 5,007,225, Cl. 52-799.000.

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Da Franca, Jose D. A. E.; Vital, Joao P. C. C.; and Leme, Carlos M. D. A. D. A., 5,008,674, Cl. 341-150.000.

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Adams, John L., 5,008,663, Cl. 340-825.500.

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Carr, Michael D.; and Leaning, Anthony R., 5,008,747, Cl. 358-136.000.
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Broom, Henry T., to Nalco Chemical Company. Fluidization of heavy slurries. 5,008,035, Cl. 252-312.000.

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Aoshima, Syozo; Hirota, Kunio; Sakakibara, Hiroshi; Sawai, Naoyuki; and Sato, Takeaki, 5,007,281, Cl. 72-406.000.
Okamoto, Tsugio, 5,008,700, Cl. 355-27.000.
Shinoda, Akira, 5,007,849, Cl. 439-165.000.
Yamakawa, Kiyoshi, 5,007,751, Cl. 400-322.000.

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Brown, Alan J.; James, Roger; and Glasson, Nigel P., to ECC International Limited. Biological support. 5,008,220, Cl. 501-81.000.

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Brown, Gary L.: *See—*
Knierim, David L.; and Brown, Gary L., 5,008,741, Cl. 358-32.000.

Brown, Kenneth; and Riley, Richard E., to Hamilton Standard Controls, Inc. Method of manufacturing an electrical component, e.g. a digital contacting encoder. 5,007,159, Cl. 29-622.000.

Brown, Raymond L.; and Shock, Clifford L., Jr., to Hughes Aircraft Company. High current feedthrough package. 5,008,492, Cl. 174-52.400.

Brown, Richard W., to ICI Americas Inc. Preparation of 2-(chloro, bromo or nitro)-4-(alkyl-sulfonyl)benzoic acids and intermediates. 5,008,448, Cl. 562-429.000.

Brown, Robert A., to Acushnet Company. Preparation of wound golf ball cores. 5,007,594, Cl. 242-3.000.

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Brownell, George L.; Hays, Mary K.; and Sivak, Andrew J., to Aristech Chemical Corporation. Silyl derivatives of 2,6-dimethyl-4-allyl phenol. 5,008,421, Cl. 556-406.000.

Brubaker, Bryce D.: *See—*
Myers, Robert I.; Brubaker, Bryce D.; and Overall, Robert E., 5,007,236, Cl. 60-256.000.

Bruck, Martin: *See—*
Gerdau, Thomas; Kleiner, Hans-Jerg; Peuckert, Marcellus; Bruck, Martin; and Aldinger, Fritz, 5,008,423, Cl. 556-412.000.

Bruckner, Raimund: *See—*
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Brunnett, Carl J.; Zachary, Allen B.; and Heiple, Holly C., to Picker International, Inc. Combined high speed backprojection and forward projection processor for CT systems. 5,008,822, Cl. 364-413.210.

Brunt, Chris; and Carner, Don C., Jr., to Orleander S.A. Wireless bicycle wheel monitor system. 5,008,647, Cl. 340-432.000.

Bryan, Philip S.; Lambert, Patrick M.; Towers, Christine M.; and Jarrold, Gregory S., to Eastman Kodak Company. Titanium activated hafnia and/or zirconia host phosphor containing neodymium. 5,008,034, Cl. 252-301.40F.

Bryant, David R.: *See—*
Wegman, Richard W.; and Bryant, David R., 5,008,235, Cl. 502-342.000.

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Ruckert, Holger, 5,008,749, Cl. 358-147.000.
Wischermann, Gerhard, 5,008,751, Cl. 358-148.000.

Bucher, Michel B.: *See—*
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Buchheim, Julie A.: *See—*
Ranch, Jerome P.; and Buchheim, Julie A., 5,008,200, Cl. 435-240.490.

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Guichard, Jacques; Buchner, Georges; and Labat, Jacques, 5,008,924, Cl. 379-53.000.

Buckle, Brian L., to Buoyco (M.M.) Limited. Gas control valves and apparatus for controlling buoyancy in water. 5,007,364, Cl. 114-331.000.

Buckwalter, Kendrick. Seal for art display frames of wood. 5,007,189, Cl. 40-152.000.

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Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponacz, Anna; Eifert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo ; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.

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Buffman, Martin: *See—*
Riley, Thomas P.; Buffman, Martin; and Cyr, Reginald J., 5,008,860, Cl. 367-6.000.

Buhr, Gerhard: *See—*
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Bulduc, Lawrence R.: *See—*
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Bulgrien, Garth H., to Ford New Holland, Inc. Method of overriding ratio matching feature in power shift transmissions. 5,007,299, Cl. 74-335.000.

Bullis, Robert H.; and Swindal, James L., to United Technologies Corporation. Capacitive accelerometer with mid-plane proof mass. 5,008,774, Cl. 361-283.000.

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Patroni, Joseph J.; and Brandon, Malcolm R., 5,008,377, Cl. 530-416.000.

Buoyco (M.M.) Limited: *See—*
Buckle, Brian L., 5,007,364, Cl. 114-331.000.

Burg, Karlheinz: *See—*
Beck, Horst-Philipp; Emig, Gerhard; Wiesgickl, Gunther; Burg, Karlheinz; and Muck, Karl-Friedrich, 5,008,463, Cl. 568-487.000.

Burgess, Ian A.; Dennis, Andrew M.; and Marshall, Christopher B., to U.S. Philips Corporation. Apparatus adding values represented as residues in modulo arithmetic. 5,008,849, Cl. 364-746.000.

Burgett, William B. Traffic barriers with built-in carriers. 5,007,763, Cl. 404-6.000.

Burin, Ralph R.: *See—*
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Burk, Mark J., to Du Pont de Nemours, E. I., and Company. Chiral phospholane transition metal catalysts. 5,008,457, Cl. 568-12.000.

Burke, Barry E., to Massachusetts Institute of Technology. Suppressing dark current in charge-coupled devices. 5,008,758, Cl. 358-213.160.

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Hirohata, Michio, 5,008,693, Cl. 354-214.000.
Inuzuka, Tsuneki; Maeshima, Katsuyoshi; and Tomosada, Masahiro, 5,008,712, Cl. 355-206.000.
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Ohmori, Hiroyuki; Tanaka, Hisami; and Okunuki, Masami, 5,008,706, Cl. 355-219.000.
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Christopher, Kenneth W., Jr.; Feigenbaum, Barry A.; Kim, Jin; and Love, Douglas C., to International Business Machines Corporation. Method of rapidly opening disk files identified by path names. 5,008,820, Cl. 364-200.000.
Chrome Technology Inc.: *See*—
Baturay, Omar; Shirk, James E.; and Sigerson, Adam L., 5,007,960, Cl. 75-743.000.
Chrysler Corporation: *See*—
Himmel, Francis, 5,007,570, Cl. 224-321.000.
Chu, Gil-Namg: *See*—
Nishi, Takao; Uno, Tetsuyuki; Koga, Yasuo; and Chu, Gil-Namg, 5,008,274, Cl. 514-312.000.
Chu, Howard: *See*—
Mallon, Charles B.; and Chu, Howard, 5,008,363, Cl. 528-49.000.
Chu, Pochen: *See*—
Johnson, Ivy D.; Chu, Pochen; and Kresge, Charles T., 5,008,481, Cl. 585-418.000.
Chuang, Tsu-Kung: *See*—
Loh, Kuo-Liang; Shieh, Puh; Chao, Y. S.; and Chuang, Tsu-Kung, 5,008,435, Cl. 560-24.000.
Chuma, Akira: *See*—
Beppu, Osamu; Moribe, Toshihiro; Tezuka, Youjiro; and Chuma, Akira, 5,008,573, Cl. 310-67.00R.
Chumley, Robert E.: *See*—
Williams, Dennis A.; Horton, Roger L.; Newlove, John C.; and Chumley, Robert E., 5,007,481, Cl. 166-300.000.
Chumney, Richard D., Jr., to American Tobacco Company, The. Method of fabricating an all-tobacco cigarette controlling tar delivery and an all-tobacco cigarette. 5,007,439, Cl. 131-331.000.
Chung-Cheng, Lin. Electrical stapler. 5,007,572, Cl. 227-7.000.
Chung, Yeong-Huei; and Cheng, Der-Shyang, to China Steel Corporation. Lime-based injection powder for steel-refining. 5,007,958, Cl. 75-330.000.
Churley, George: *See*—
Weigl, William; and Churley, George, 5,007,645, Cl. 273-181.00F.
Ciaffoni, James L., to Baker Hughes Incorporated. Mechanism for filter cake removal. 5,008,009, Cl. 210-193.000.
Ciba-Geigy Corporation: *See*—
Erkens, Leonardus J. H.; Algra, Gerben P.; Geurts, Herman J. J. M.; and Gielkens, Hubertus P. A., 5,007,963, Cl. 106-433.000.
Husler, Rinaldo; Klingert, Bernd; Rembold, Manfred; and Steiner, Eginhard, 5,008,302, Cl. 522-14.000.
Martinelli, Bruno; Ghezzi, Markus; and Streicher, Gunter, 5,007,941, Cl. 8-436.000.
Meier, Hans R.; Evans, Samuel; and Dubs, Paul, 5,008,459, Cl. 568-46.000.
Pissiotas, Georg; Moser, Hans; and Brunner, Hans-Georg, 5,007,951, Cl. 71-72.000.
Cibere, Joseph J.: *See*—
Baber, James A.; and Cibere, Joseph J., 5,007,646, Cl. 273-183.00E.
Cimini, Leonard J., Jr.; and Habbab, Isam M. I., to AT&T Bell Laboratories. Polarization-insensitive technique for coherent optical communication. 5,008,958, Cl. 455-619.000.
Cincinnati Electronics Corporation: *See*—
Davis, Rex M.; and Greiner, Mark E., 5,008,523, Cl. 250-214.00A.
Cincinnati Milacron Inc.: *See*—
Hallbach, Raymond L., 5,007,504, Cl. 184-8.000.
Citizen Watch Co., Ltd.: *See*—
Kurafuji, Hiroshi, 5,008,684, Cl. 346-76.0PH.
Clarion Co., Ltd.: *See*—
Hamatsu, Mashiro; and Endo, Mamoru, 5,008,898, Cl. 375-1.000.
Clark, Walter F.; and Chen, Bor-Dong, to Ford Motor Company. Hybrid air charge calculation system. 5,008,824, Cl. 364-431.050.
Clarke, John R. P., to Imperial Chemical Industries PLC. Detection system. 5,007,996, Cl. 204-409.000.
Claussen, Uwe; and Krock, Friedrich W., to Bayer Aktiengesellschaft. Light-polarizing films or sheets containing stilbene dyestuffs. 5,007,942, Cl. 8-506.000.
Clay, Robert B.: *See*—
Trapp, Richard E.; Hansen, Gary L.; Clay, Robert B.; Dubetsky, Lawrence J.; and Olney, Robert S., 5,007,973, Cl. 149-109.600.
Clayton Dewandre Co., Ltd.: *See*—
Hawker, Michael J., 5,007,455, Cl. 137-596.160.
Cleavelin, C. Rinn: *See*—
Gill, Manzur; Lin, Sung-Wei; Cleavelin, C. Rinn; and McElroy, David J., 5,008,721, Cl. 357-23.500.
Cleghorn, Monica R., to Easyfax, Inc. Public access facsimile system. 5,008,928, Cl. 379-100.000.
Clemens, John M.: *See*—
Brown, William E., III; Safford, Sarah E.; and Clemens, John M., 5,008,080, Cl. 422-56.000.
Clement, Pamela A.: *See*—
Zecchino, Julius R.; Krishnaswamy, Natrajan; Clement, Pamela A.; and Vargas, Anthony, 5,008,100, Cl. 424-59.000.
Clement, Sandra K.: *See*—
Cameron, Randy E.; and Clement, Sandra K., 5,008,041, Cl. 252-500.000.
Clifft, Christy G.: *See*—
Allenza, Paul; Clifft, Christy G.; and Morrell, Marie J., 5,008,195, Cl. 435-193.000.
Clitherow, John W., to Glaxo Group Limited. Salts of ranitidine and complexes of bismuth with carboxylic acids, and pharmaceutical compositions thereof. 5,008,256, Cl. 514-184.000.
Clough, John M.; Godfrey, Christopher R. A.; Heaney, Stephen P.; and Anderton, Kenneth, to Imperial Chemical Industries PLC. Methyl α-(2-substituted)pyrid-3-yl-β-methoxyacrylates, compositions containing them and their use as fungicides. 5,008,276, Cl. 514-335.000.
Clover Co., Ltd.: *See*—
Nakai, Hatsuo, 5,007,262, Cl. 70-312.000.
Coates, Ian H.; Oxford, Alexander W.; and North, Peter C., to Glaxo Group Limited. Lactam derivatives. 5,008,272, Cl. 514-292.000.
Coca-Cola Company, The: *See*—
Richter, Simon J.; and Hohmann, Frank G., 5,007,565, Cl. 222-481.000.
Cochran, Kirby, to American Business Seminars, Inc. Tactile enhancement method for progressively optimized reading. 5,007,838, Cl. 434-178.000.
Coddington, John D., to United States of America, Air Force. Schmitt-triggered TTL to CML input buffer apparatus. 5,008,570, Cl. 307-475.000.
Coe, Everett L., Jr.: *See*—
Krigmont, Henry V.; and Coe, Everett L., Jr., 5,008,628, Cl. 324-693.000.
Coeur Laboratories, Inc.: *See*—
Densmore, Larry L.; and Lindner, Thomas A., 5,007,904, Cl. 604-228.000.
Coffen, David L.; Madan, Pradeep B.; and Schwartz, Alan, to Hoffmann-La Roche Inc. Glycidic acid ester and process of preparation. 5,008,411, Cl. 549-519.000.
Coffman, Frederick E.; and Pelton, Charles H., to Chemcut Corporation. Process and apparatus for treating articles of substantial thickness. 5,007,968, Cl. 134-25.400.
Cohen, Amir, to Agroteam Consultants Ltd; and Plastro-Gvat. Rotary sprinklers. 5,007,586, Cl. 239-222.170.
Colaitis, Marie-Jean: *See*—
Bernard, Philippe; and Colaitis, Marie-Jean, 5,008,746, Cl. 358-133.000.
Colditz, Johannes K. E.: *See*—
van der Velden, Johnny; van Bergen, Theodorus F.; Simons, August L. H.; Colditz, Johannes K. E.; Ligtenberg, Martinus A. C.; and Dreesen, Franciscus M., 5,008,591, Cl. 313-524.000.
Cole, Edward H., Jr.; and Bilynsky, John D., to Borg-Warner Automotive, Inc. Chain-belt. 5,007,883, Cl. 474-242.000.
Cole, Terence M.: *See*—
Crane, David P.; Cole, Terence M.; and Poskitt, Geoffrey, 5,008,813, Cl. 364-200.000.
Coleman, Keith: *See*—
Reed, Keith; and Coleman, Keith, 5,007,650, Cl. 273-249.000.
Colgate-Palmolive Co.: *See*—
Cook, William J.; Wisniewski, Karen L.; Dixit, Nagaraj S.; and Rao, Nandakumar S., 5,008,030, Cl. 252-106.000.
Paciullo, Francis P., 5,007,375, Cl. 119-170.000.
Collagen Corporation: *See*—
Bentz, Hanne; Ellingsworth, Larry; and Armstrong, Rosa, 5,008,240, Cl. 514-2.000.

Collins, Joseph M.: *See—*
Palmer, Larry R.; Collins, Joseph M.; and Holloway, Gary M., 5,008,667, Cl. 340-984.000.

Colony Corporation: *See—*
Dweck, Mark, 5,008,869, Cl. 368-228.000.

Columbus, Richard L., to Eastman Kodak Company. Phase separation container with fixed means preventing remixing. 5,007,892, Cl. 494-17.000.

Combs, Bryan D.: *See—*
Sels, Michael O.; and Combs, Bryan D., 5,008,944, Cl. 381-86.000.

Comfortex, Inc.: *See—*
Salyards, Donald M., 5,007,123, Cl. 5-448.000.

Commissariat a l'Energie Atomique: *See—*
Audaire, Luc; Peuzin, Jean C.; and Schaub, Bernard, 5,008,541, Cl. 250-338.300.
Nicolas, Pierre; and Pantigny, Philippe, 5,008,544, Cl. 250-349.000.

Computer & Communications Technology Corp.: *See—*
Carlson, Carl J.; Zarouri, Mourad; and Coon, Warren, 5,008,768, Cl. 360-104.000.

Conducta Gesellschaft fur Meb- und Regeltechnik mbH & Co.: *See—*
Ambos, Stefan, 5,007,283, Cl. 73-1.00G.

Conemac, Timothy D. Electronic door wedge alarm. 5,008,648, Cl. 340-546.000.

Congleton, Helen; Slaton, Carol L.; Koudounaris, Angelo; Smith, Gerald B.; and Soto, Vicente, to Hughes Aircraft Company. Testable ribbon bonding method and wedge bonding tool for microcircuit device fabrication. 5,007,576, Cl. 228-103.000.

Conifer Corporation: *See—*
Hemmie, Dale L., 5,008,956, Cl. 455-318.000.

Conlan, John T.; and Whitekettle, Wilson K., to Betz Laboratories, Inc. Biocidal compositions and use thereof containing a synergistic mixture of glutaraldehyde and 2-(decylthio) enthanamine. 5,008,023, Cl. 210-764.000.

Conley, Jerry J.; and Mortensen, Gary B., to E. F. Johnson Co. Light emitting polymer electrical energy source. 5,008,579, Cl. 310-303.000.

Conner, Jesse R.; and Rieber, Roy S., to enviroGuard, Inc. In-situ formation of soluble silicates from biogenetic silica in chemical fixation/solidification treatment of wastes. 5,008,021, Cl. 210-751.000.

Connolly, Daniel T.; and Feder, Joseph, to Monsanto Company. Stimulation of endothelial cell growth. 5,008,196, Cl. 435-240.200.

Coody, Archibald S., to Fred Arbogast Company, Inc. Artificial fishing lures. 5,007,194, Cl. 43-42.290.

Cook, James C., II, to Progressive Dynamics, Inc. Fluorescent lighting control circuit. 5,008,598, Cl. 315-225.000.

Cook, Robert J. Topographic measuring device. 5,007,174, Cl. 33-1.0SD.

Cook, William J.; Wisniewski, Karen L.; Dixit, Nagaraj S.; and Rao, Nandakumar S., to Colgate-Palmolive Co. Acidic disinfectant all-purpose liquid cleaning composition. 5,008,030, Cl. 252-106.000.

Cooke, Mack A. Crane apparatus. 5,007,543, Cl. 212-160.000.

Coolidge, Robert B.; and Nguyen, David M., to Dresser Industries, Inc. Drill bit having improved cutting element retention system. 5,007,493, Cl. 175-329.000.

Coon, Warren: *See—*
Carlson, Carl J.; Zarouri, Mourad; and Coon, Warren, 5,008,768, Cl. 360-104.000.

Cooper, Kelvin; and Fray, Michael J., to Pfizer Inc. Diazepine antiallergy agents. 5,008,263, Cl. 514-220.000.

Cooper, Michael D.: *See—*
King, David L.; Cooper, Michael D.; and Faber, Michael A., 5,008,468, Cl. 568-697.000.

Cooper, Robert C., to AT&T Bell Laboratories. Terminal assembly for linear magnetic component bobbin. 5,008,644, Cl. 336-192.000.

Copeland, Stephan, to FLOS S.p.A. Guidable arm, particularly for free-positioning lamps. 5,008,793, Cl. 362-413.000.

Corain, Luciano; Maitan, Gianni; Perlini, Renato; and Bacchetti, Mario, to Nuovopignone-Industrie Meccaniche e Fonderia, S.p.A. Weft clamping system for inserter rapier. 5,007,463, Cl. 139-448.000.

Corbett, Seguard. Multi-port container. 5,007,547, Cl. 220-476.000.

Cordell, Ralph L.: *See—*
Crowe, Christopher; Cordell, Ralph L.; and Kahng, Seun K., 5,007,292, Cl. 73-654.000.

Corley, Larry S., to Shell Oil Company. Gas cylinder safety device. 5,007,548, Cl. 220-3.000.

Cornell Research Foundation, Inc.: *See—*
Wellner, Daniel, 5,008,372, Cl. 530-345.000.

Cornerstone Products Inc.: *See—*
Van Druff, Albert, Jr., 5,007,249, Cl. 62-255.000.

Corning Incorporated: *See—*
Araujo, Roger J., 5,007,948, Cl. 65-30.130.
Ketcham, Thomas D., 5,008,221, Cl. 501-103.000.

Cosart, Lee D., III: *See—*
Nelson, Nancy W.; Cosart, Lee D., III; Peregrino, Luiz; and Ingman, Eric M., 5,008,610, Cl. 324-84.000.

Counts, David E.: *See—*
Wellenkotter, Carl A.; and Counts, David E., 5,007,396, Cl. 123-339.000.

Counts, Richard C., to USI Lighting, Inc. Power factor correction circuit. 5,008,599, Cl. 315-247.000.

Cox, Laurence C.; Dugan, Raymond; Evans, Daniel D.; Griffith, Robert; Handley, Terry L.; and Leeper, Jeffrey J., to National Steel Corporation. Metal strip edge trimming apparatus. 5,007,318, Cl. 83-425.200.

Cox, Roger L.; DeLoye, Michael J.; and Myers, Robert L., to International Business Machines Corporation. Personal computer power supply. 5,008,829, Cl. 364-480.000.

Cox, Walter N.: *See—*
Cheriff, Frank J.; Kirk, Joseph J.; Pulver, Arnold M.; and Cox, Walter N., 5,008,656, Cl. 340-718.000.

Cox, William M.: *See—*
Fischer, Michael A.; Cox, William M.; and McDougall, Floyd H., 5,008,879, Cl. 370-85.200.

Craig, Franklin J.: *See—*
Weder, Donald E.; Straeter, William F.; Straeter, Joseph G.; Craig, Franklin J.; Donnelly, Wilma M.; and Redditt, Jack W., 5,007,229, Cl. 53-397.000.

Craig, Stuart; and Helland, Earl, to Inventive Ideas Incorporated. Compass. 5,007,320, Cl. 83-745.000.

Crane, David P.; Cole, Terence M.; and Poskitt, Geoffrey, to International Computers Limited. Multi-cache data storage system. 5,008,813, Cl. 364-200.000.

Crater, Arthur H.: *See—*
Mullen, Charles E.; and Crater, Arthur H., 5,007,760, Cl. 403-13.000.

Crawshay, Richard, to Inco Limited. Belt and chain flight conveyor. 5,007,525, Cl. 198-690.200.

Creative Packaging Corp.: *See—*
Beck, James M., 5,007,555, Cl. 220-339.000.

Cree Research, Inc.: *See—*
Edmond, John A.; Waltz, Douglas G.; Mitchell, Muni M.; Sedigh, Mohammad; and Hamerski, Roman, 5,008,735, Cl. 357-74.000.

Crespiatico, Giampietro; and Mondori, Luciano. Locking device for connectors of printed circuit boards. 5,007,854, Cl. 439-367.000.

Crestmoore Ltd.: *See—*
Nussbaum, Avraham, 5,007,915, Cl. 606-133.000.

Crewe, Albert V., to Orchid One Corporation. High performance, vacuum compatible electromagnetic lens coil. 5,008,549, Cl. 250-396.0ML.

Crinos Industria Farmacobiologica S.p.A.: *See—*
Casu, Benito; Torri, Giangiacomo; Naggi, Annamaria; Mantovani, Marisa; Pescador, Rodolfo; Porta, Roberto; and Prino, Giuseppe, 5,008,253, Cl. 514-54.000.

Critchlow, David N.; Yehushua, Moshe; Avis, Graham M.; Heimbigner, Wade L.; Johnson, Karle J.; and Wiley, George A., to International Mobile Machines Corporation. Subscriber unit for wireless digital subscriber communication system. 5,008,900, Cl. 375-8.000.

Crivello, Sam: *See—*
Crooks, Theodore J.; Zentz, Terry L.; and Morris, Matthew G., 5,007,518, Cl. 194-212.000.

Crompton, Charles E.; Kazi, Abdulla M. Z.; and Soni, Inderjit S., to Laurel Industries, Inc. Colloidal sols of antimony pentoxide in an aqueous medium and their preparation. 5,008,036, Cl. 252-313.100.

Cronin, William J.: *See—*
Olsen, Steven A.; Cronin, William J.; Jarvis, Ben L.; and McMillan, Jeff G., 5,008,929, Cl. 379-112.000.

Crooks, Theodore J.; Zentz, Terry L.; and Morris, Matthew G., to Crivello, Sam. Apparatus for renting articles. 5,007,518, Cl. 194-212.000.

Crossman, Janet L.: *See—*
Erickson, Phillip J.; Crossman, Janet L.; Heacock, Gregory L.; and Mainster, Martin A., 5,007,729, Cl. 351-219.000.

Crowe, Christopher; Cordell, Ralph L.; and Kahng, Seun K., to Amoco Corporation. Multicomponent transducer. 5,007,292, Cl. 73-654.000.

Crown Equipment Corporation: *See—*
Dammeyer, Ned E.; and Thobe, Nick D., 5,008,604, Cl. 318-587.000.

Crum, Spencer E.: *See—*
Bernhardt, Douglas H.; Matheu, Guillermo R.; Crum, Spencer E.; and Adelmann, John T., 5,007,336, Cl. 99-487.000.

Crumley, Gary B., to BOC Group, Inc., The. Water cooled crucible. 5,008,897, Cl. 373-11.000.

CSELT - Centro Studi e Laboratori Telecommunicazioni S.p.A.: *See—*
Accatino, Luciano; and Bertin, Giorgio, 5,008,640, Cl. 333-219.100.
Calvani, Riccardo; and Caponi, Renato, 5,007,735, Cl. 356-128.000.

Csonka, James M.: *See—*
Naro, Rodney L.; Csonka, James M.; and Merritt, Michael A., 5,008,074, Cl. 420-578.000.

Cullis, Pieter R.; Hope, Michael J.; and Bally, Marcel B., to Liposome Company, Inc., The. Extrusion technique for producing unilamellar vesicles. 5,008,050, Cl. 264-4.300.

Cunningham, Timothy J.: *See—*
Linsky, Cary B.; and Cunningham, Timothy J., 5,007,916, Cl. 606-151.000.

Cunningham, William R.; Amareno, Carmelo S.; and Kayan, Helmut. Foolproof coupon redemption system. 5,008,519, Cl. 235-383.000.

Cur, Omer N.: *See—*
Kruck, Richard W.; Cur, Omer N.; Leclear, Douglas D.; Kuehl, Steven J.; and Burin, Ralph R., 5,007,246, Cl. 62-131.000.

Curtis, Jeff: *See—*
Nyberg, Eric D.; Klingman, Ken A.; Curtis, Jeff; and Stewart, Ray F., 5,007,989, Cl. 204-1.110.

Curtis, Lee J. Container for a paint brush. 5,007,553, Cl. 220-90.000.

Cutler, Dave: *See—*
Bhandarkar, Dileep P.; Cutler, Dave; Cardoza, Wayne; Witek, Rich; and Orbits, Dave, 5,008,812, Cl. 364-200.000.

Cutolo, Antonello; Solimeno, Salvatore; and Madey, John M. J. Real time analyzer for pulsed laser systems. 5,007,717, Cl. 350-353.000.

Cyr, Reginald, to United States of America, America. Acoustic transponder receiver circuit. 5,008,859, Cl. 367-2.000.

Cyr, Reginald J.: *See—*
Riley, Thomas P.; Buffman, Martin; and Cyr, Reginald J., 5,008,860, Cl. 367-6.000.

Czirr, John B. Method of downhole neutron monitoring. 5,008,067, Cl. 376-159.000.

Czubatyj, Wolodymyr; and Himmler, Ronald, to Energy Conversion Devices, Inc. Functional testing of ultra large area, ultra large scale integrated circuits. 5,008,617, Cl. 324-158.00R.

Da Costa, Caio N. F. N., to Empresa Brasileira de Compressores S/A - Embraco. Rotary rolling piston compressor with fixed vane having a relieved incline section. 5,007,813, Cl. 418-63.000.

Da Franca, Jose D. A. E.; Vital, Joao P. C. C.; and Leme, Carlos M. D. A. D. A., to British Telecommunications. Digital-to-analog converter using switched capacitor and transverse filter. 5,008,674, Cl. 341-150.000.

Daghighian, Farhad: *See*—
Mazziotta, John C.; Daghighian, Farhad; and Hoffman, Edward J., 5,008,546, Cl. 250-366.000.

D'Agosto, Nicholas A.: *See*—
Jachmann, Emil F.; Saltzman, Jeremy; Chamberlin, David B.; D'Agosto, Nicholas A.; Harris, Mark; and Su, Jy-hong, 5,008,835, Cl. 364-513.500.

Dahle, Olof; and Fischbach, Manfred, to Bergwerksverband GmbH; and Hebben & Fischbach GmbH. Method and apparatus for making drill holes under spatially restricted conditions. 5,007,487, Cl. 175-57.000.

Dahlen, John M.; Chhabra, Narender K.; Araujo, Richard K.; Scholten, James R.; Reid, Robert W.; and Soikkeli, Matti, to Charles Stark Draper Laboratory, The. Low cost drifter. 5,007,285, Cl. 73-170.00A.

Dahlin, Steinar J. E. A.; and Ghisler, Walter, to Telefonaktiebolaget L M Ericsson. Mobile station link supervision utilizing digital voice color codes. 5,008,953, Cl. 455-33.000.

Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See*—
Matsumoto, Shusaku; Hatakawa, Yoshio; and Nakajima, Akihiko, 5,008,387, Cl. 536-119.000.
Taniuchi, Akira; Kataoka, Hironori; and Ito, Etsuo, 5,007,955, Cl. 71-103.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See*—
Kuramochi, Wataru; Tsuruoka, Yoshiaki; Saitou, Norikazu; Shibuya, Akira; and Yamashita, Shuichi, 5,008,552, Cl. 235-483.000.

Daiichi Denso Buhin Co., Ltd.: *See*—
Takano, Tsunesuke; and Shinzawa, Kouichi, 5,008,505, Cl. 200-531.000.

Daikin Industries Ltd.: *See*—
Honda, Norimasa; and Sano, Masahiro, 5,008,042, Cl. 252-518.000.
Shirai, Shinji; Negishi, Hiroyuki; Tomihashi, Nobuyuki; and Yamane, Masayuki, 5,008,327, Cl. 524-544.000.

Daimler-Benz: *See*—
Wulff, Dietrich; Jager, Hans-Ludwig; and Weisse, Joachim, 5,007,761, Cl. 403-287.000.

Daimler-Benz AG: *See*—
Grohn, Michael; Murwald, Mario; Thoma, Frank; and Hoffmann, Karlheinz, 5,007,401, Cl. 123-509.000.
Scherenberg, Dieter, 5,007,402, Cl. 123-549.000.

Daly, John K.; Kreinberg, Earl R.; Puerner, Dean A.; and Adcock, Marty E., to AMP Incorporated. Electrical connector for flat power cable. 5,007,858, Cl. 439-498.000.

Dambkes, Georg: *See*—
Breitkopf, Norbert; Dambkes, Georg; and Bach, Hanswilhelm, 5,008,473, Cl. 568-868.000.

Damin, Bernard: *See*—
Laurent, Dominque; Fortunato, Gerard; Damin, Bernard; and Napoleon, Marcel, 5,007,733, Cl. 356-70.000.

Dammeyer, Ned E.; and Thobe, Nick D., to Crown Equipment Corporation. Dynamic clipper for use in a vehicle guidance system. 5,008,604, Cl. 318-587.000.

Dana Corporation: *See*—
Flotow, Richard A., 5,007,517, Cl. 192-106.100.
Ostrander, Robert J., 5,007,511, Cl. 192-8.00R.

Dandreaux, Gary; Login, Robert B.; Merianos, John J.; Garelick, Paul; Plochocka, Krystyna; Negrin, Max; and Shih, Jenn S., to GAF Chemicals Corporation. Poly(pyrrolidonyl oxazoline). 5,008,367, Cl. 528-326.000.

Danfoss A/S: *See*—
Danig, Per, 5,007,247, Cl. 62-174.000.

Dang, Thuy D.: *See*—
Evers, Robert C.; Dang, Thuy D.; and Moore, D. Roger, 5,008,346, Cl. 525-426.000.

Daniel, Jean-Pierre; and Fauchard, Jean-Pierre, to Thomson-CSF. System for target designation by laser. 5,007,736, Cl. 356-152.000.

Daniels, Thomas E., Jr. Ice shaver apparatus. 5,007,591, Cl. 241-37.500.

Danig, Per, to Danfoss A/S. Refrigeration or heat pump installation. 5,007,247, Cl. 62-174.000.

Dannatt, Hugh St. L. Mailing machine tape module and tape take-up and moistening system thereof. 5,007,370, Cl. 118-246.000.

Dardik, Irving I. Rhythmic biofeedback technique. 5,007,430, Cl. 128-696.000.

Daroca, Allen P. Combined fence and irrigation system. 5,007,587, Cl. 239-289.000.

Dasa, Madhava. Multiple configuration model aircraft. 5,007,875, Cl. 446-66.000.

Da Silva, Ivan P.: *See*—
Hull, Harry F.; and Da Silva, Ivan P., 5,007,993, Cl. 204-228.000.

Datapoint Corporation: *See*—
Fischer, Michael A.; Cox, William M.; and McDougall, Floyd H., 5,008,879, Cl. 370-85.200.

Daughdrill, Annette S. Head restraint. 5,007,122, Cl. 5-434.000.

Da Vault, Jimmy C. Truck sidewall mounted chain saw carrier. 5,007,568, Cl. 224-42.45R.

Davenport, Kenneth G.: *See*—
Elango, Varadaraj; and Davenport, Kenneth G., 5,008,439, Cl. 560-61.000.

Davies, Ben, deceased: *See*—
Kernion, Mark C.; and Davies, Ben, deceased, 5,007,615, Cl. 251-368.000.

Davies, Evelyn, executrix: *See*—
Kernion, Mark C.; and Davies, Ben, deceased, 5,007,615, Cl. 251-368.000.

Davies, Jenkin E.: *See*—
Dijk, Jan V.; and Davies, Jenkin E., 5,008,452, Cl. 564-256.000.

Davies, Paul M.; and Smith, Raymond A., to Albright & Wilson Limited. Purification of phosphorus compounds. 5,008,015, Cl. 210-634.000.

Davies, Robert B.: *See*—
Jarrett, Robert B.; and Davies, Robert B., 5,008,736, Cl. 357-75.000.

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Gunn, Charles L.; Davis, Harold; Spahni, Milton D., Jr.; and Wanless, Ronald H., 5,007,541, Cl. 206-611.000.

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Tucker, Richard B. C.; Davis, Jackie L.; and Lewis, Fielding H., Jr., 5,007,652, Cl. 273-326.000.

Davis, Larry, to Hoechst-Roussel Pharmaceuticals Inc. N-substituted-5,6-dimethoxy-1,2-benzisoxazole-3-propanamine and related compounds as analgesic and hypotensive agents. 5,008,264, Cl. 514-253.000.

Davis, Rex M.; and Greiner, Mark E., to Cincinnati Electronics Corporation. Current measuring circuit with means for nullifying the effects of current source and lead resistance. 5,008,523, Cl. 250-214.00A.

Davis, Scott W.: *See*—
Musto, Mario S.; and Davis, Scott W., 5,007,675, Cl. 297-195.000.

Davis, Walter L.; and Macnak, Philip P., to Motorola, Inc. Global satellite communication system with geographic protocol conversion. 5,008,952, Cl. 455-12.000.

Day, Roger W.; and Hani, Rahim, to Olin Corporation. Process for the preparation of nitramine-containing homopolymers and co-polymers. 5,008,443, Cl. 560-169.000.

Dayco Products, Inc.: *See*—
Holden, Homer N.; and Loyer, Philip K., 5,007,839, Cl. 439-191.000.

De La Rue Giori S.A.: *See*—
Germann, Albrecht J., 5,007,339, Cl. 101-177.000.

De La Rue Systems, Ltd.: *See*—
Skinner, John A., 5,007,628, Cl. 271-263.000.

Deak, Frederick R.; and Wrisley, David B., Jr., to AMP Incorporated. Flexible area array connector. 5,007,842, Cl. 439-66.000.

Dean, Alan J.; and Hopper, Hans P., to British Petroleum Company p.l.c., The. Electrical cable assembly. 5,007,852, Cl. 439-201.000.

DeCecca, Michael L.; Kowalczyk, Michael S.; Gray, Thomas W.; and Partridge, Paul W., to Eastman Kodak Company. Corona charger apparatus of simplified construction. 5,008,538, Cl. 250-324.000.

DeCoursey, Robert T.; and Messick, Mikel J. Vacuum sizing tank with electronically controlled vacuum pressure. 5,008,051, Cl. 264-40.300.

Defenbaugh, John F.; and Markunas, Albert L., to Sundstrand Corporation. Vapor cycle system with multiple evaporator load control and superheat control. 5,007,245, Cl. 62-117.000.

Defibaugh, George R.; Myers, Earl C., Jr.; and Smith, Steven G., to AMP Incorporated. Shielded connector having a multiply orientable housing. 5,007,862, Cl. 439-607.000.

Degenhardt, Peter. Device for producing cone-shaped bodies of glass, particularly tiffany-style lampshades. 5,007,575, Cl. 228-44.300.

Deguchi, Takashi: *See*—
Tsukisaka, Ryogo; Kondo, Satoshi; Kaneguchi, Toshio; and Deguchi, Takashi, 5,007,964, Cl. 106-464.000.

DeGuchi, Toshihisa: *See*—
Numata, Tomiyuki; Iwaki, Takashi; Kojima, Kunio; and DeGuchi, Toshihisa, 5,008,888, Cl. 372-29.000.

Degussa Aktiengesellschaft: *See*—
Neidermeyer, Uwe; Kragl, Udo; Kula, Maria R.; Wandrey, Christian; Makrylaleas, Kyriakos; and Drauz, Karlheinz, 5,008,192, Cl. 435-128.000.
Speer, Dietrich; Kiss, Akos; Kleinschmit, Peter; and Hanich, Juergen, 5,008,223, Cl. 106-450.000.

Dehausse, Robert: *See*—
Thuez, Jean-Luc; and Dehausse, Robert, 5,007,251, Cl. 62-476.000.

Deinhammer, Wolfgang: *See*—
Meier, Josef; Deinhammer, Wolfgang; and Krageloh, Konrad, 5,008,392, Cl. 546-250.000.

de Jong, Hendrik J., to N.V. Nederlandsche Apparatenfabriek Nedap. Electromagnetic detection system. 5,008,660, Cl. 340-825.540.

DeKraker, Larry, to Steelcase Inc. Chair back height adjustment mechanism. 5,007,678, Cl. 297-353.000.

de Laforcade, Vincent, to L'Oreal. Dispensing head for an additive product for mounting on a receptacle and a receptacle equipped with such a head. 5,007,563, Cl. 222-145.000.

DeLaney, Sabrena R. Vibrating mattress. 5,007,410, Cl. 128-33.000.

Delaware Capital Formation, Inc.: *See*—
Ball, James H.; and Gardner, Willis W., 5,007,745, Cl. 384-307.000.

Delclaux, Andre R.: *See*—
Bertrand, Michel P.; Bucher, Michel B.; and Delclaux, Andre R., 5,008,543, Cl. 250-342.000.

Delcommune, Luc; and Ghyselinck, Philippe, to Solvay & Cie (Societe Anonyme). Article made of lactic acid polymer capable of being employed particularly as a biodegradable prosthesis and process for its manufacture. 5,007,939, Cl. 623-66.000.

DeLoye, Michael J.: *See*—
Cox, Roger L.; DeLoye, Michael J.; and Myers, Robert L., 5,008,829, Cl. 364-480.000.
De Martino, Ronald N.: *See*—
Thackara, John I.; Lipscomb, George F.; Yoon, Hyun-Nam; and De Martino, Ronald N., 5,007,696, Cl. 350-96.140.
Demassey, Jacques; Demoute, Jean-Pierre; and Tessier, Jean, to Rousel Uclaf. Novel pyrethrinoids. 5,008,281, Cl. 514-376.000.
DeMichele, Glenn. Special effects control for portable musical instrument. 5,007,324, Cl. 84-741.000.
Demix Technology Inc.: *See*—
Kumada, Akio; Iochi, Takahiko; and Okada, Minoru, 5,008,581, Cl. 310-323.000.
Demmin, Jeffrey C.: *See*—
Dutta, Vivek B.; Demmin, Jeffrey C.; DiOrio, Mark L.; and Ewanich, Jon T., 5,008,734, Cl. 357-74.000.
Demoute, Jean-Pierre: *See*—
Demassey, Jacques; Demoute, Jean-Pierre; and Tessier, Jean, 5,008,281, Cl. 514-376.000.
Dempsey, John C., to Rad Elec Inc. Electret gamma/X-ray low level dosimeter. 5,008,540, Cl. 250-336.100.
Denbow, Nancy A.; and Bertino, Anne M. Adjustable head and neck garment. 5,007,115, Cl. 2-208.000.
Denes, Laszlo: *See*—
Schon, Istvan; Nyeki, Olga; Kisfaludy, Lajos, deceased; Denes, Laszlo; Hajos, Gyorgy; and Szporny, Laszlo, 5,008,246, Cl. 514-18.000.
Denning, William K.: *See*—
Robinson, Scott T.; Denning, William K.; Redfield, John M.; and Garthwaite, John H., 5,007,860, Cl. 439-540.000.
Dennis, Andrew M.: *See*—
Burgess, Ian A.; Dennis, Andrew M.; and Marshall, Christopher B., 5,008,849, Cl. 364-746.000.
Dennis, William E.; and VanWert, Bernard, to Dow Corning Corporation. Ultraviolet curing conformal coating with dual shadow cure. 5,008,301, Cl. 522-13.000.
Densmore, Larry L.; and Lindner, Thomas A., to Coeur Laboratories, Inc. Plunger for power injector angiographic syringe, and syringe comprising same. 5,007,904, Cl. 604-228.000.
Denzel, Wolfgang E.: *See*—
Ahmadi, Hamid; Beha, Johannes G.; Denzel, Wolfgang E.; Engbersen, Antonius P.; Luijten, Ronald P.; Murphy, Charles A.; and Port, Erich, 5,008,878, Cl. 370-60.000.
Denzinger, Walter: *See*—
Diessel, Paul; Perner, Johannes; Denzinger, Walter; Hartmann, Heinrich; and Raubenheimer, Hans-Juergen, 5,008,032, Cl. 252-174.240.
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DePierro, Alfred V., to Napco Security Systems, Inc. Multi-zone microprocessor fire control apparatus. 5,008,840, Cl. 364-550.000.
DepoMed Systems, Inc.: *See*—
Shell, John W., 5,007,790, Cl. 424-451.000.
DePrince, Randolph B.; and Viswanathan, Ravi, to International Minerals & Chem. Corporation. Device for the extended delivery of diffusible agents. 5,008,112, Cl. 424-468.000.
Derbyshire, Garrett, to University of Pennsylvania, The Trustees of the. Expandable transluminally implantable tubular prosthesis. 5,007,926, Cl. 623-1.000.
Design Count Pty. Ltd.: *See*—
Calkoen, Guido M., 5,007,352, Cl. 108-56.100.
DesRosiers, James J.: *See*—
Betts, William L.; and DesRosiers, James J., 5,008,903, Cl. 375-60.000.
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Kieren, Roger; Jamison, David A.; and Thomas, John J., 5,008,560, Cl. 307-19.000.
Deubel, Reinhold: *See*—
Uhrig, Heinz; Ehl, Klaus; and Deubel, Reinhold, 5,008,442, Cl. 560-149.000.
Deutsche Forschungsanstalt fur Luft- und Ramfahrt: *See*—
Butefisch, Karl-Aloys, 5,007,731, Cl. 356-28.500.
Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH: *See*—
Schulte, Burkart; Sterner, Hakan; Wetzka, Gerhard; and Hardt, Norbert, 5,007,213, Cl. 52-29.000.
Deves, Jean-Marie: *See*—
Marcilly, Christian; Deves, Jean-Marie; and Raatz, Francis, 5,008,000, Cl. 208-120.000.
DeWall, Terry L. Back support vest. 5,007,412, Cl. 128-78.000.
Dewire, Robert J.; and Kozlowski, Walter A., to Sears, Roebuck & Co. Measuring tape device. 5,007,178, Cl. 33-767.000.
D'Hoore, Terence P.; and Smith, Mark L., to Excel Industries, Inc. Door construction. 5,007,201, Cl. 49-348.000.
Dhyanchand, P. John: *See*—
Patel, Sunil; Ligon, Robert; and Dhyanchand, P. John, 5,008,797, Cl. 363-43.000.
Diaber AG: *See*—
Berczes, Zsolt, 5,007,593, Cl. 241-264.000.
Diamantoglou, Michael, to Akzo N.V. Cellulose derivatives and fibers and membranes made therefrom. 5,008,385, Cl. 536-56.000.
Dickie, William; Cavallaro, Joseph A.; and Killmeyer, Richard P., to United States of America, Energy. Apparatus for centrifugal separation of coal particles. 5,008,083, Cl. 422-101.000.
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Rothfuss, Hans; Bruckner, Raimund; Keutgen, Peter; Seeger, Josef; Winkelmann, Manfred; and Metzger, Herbert, 5,007,621, Cl. 266-220.000.
Diehl, Conrad; Smart, David C.; and Stiehler, Wayne E., to Eastman Kodak Company. Film metering apparatus and method with drive speed reduction. 5,008,692, Cl. 354-173.100.
Dierckx, Ann C. J.: *See*—
Janssens, Frans E.; Kennis, Ludo E. J.; Sommen, Francois M.; and Dierckx, Ann C. J., 5,008,268, Cl. 514-272.000.
Diesel Kiki Co., Ltd.: *See*—
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Diessel, Paul; Perner, Johannes; Denzinger, Walter; Hartmann, Heinrich; and Raubenheimer, Hans-Juergen, to BASF Aktiengesellschaft. Use of partially esterified copolymers in liquid detergents. 5,008,032, Cl. 252-174.240.
Dietlein, John E.; Kamis, Russel P.; and Dixon, Peggy L., to Dow Corning Corporation. Sealing method for joints. 5,007,765, Cl. 404-74.000.
DiFranco, Paul A. Orthodontic tweezers. 5,007,827, Cl. 433-4.000.
Digenis, George A.; and Agha, Bushra J., to University of Kentucky Research Foundation. Novel peptidyl carbamate inhibitors of the enzyme elastase. 5,008,245, Cl. 514-18.000.
Digital Corporation: *See*—
Kelleher, Brian M.; and Hussain, Zahid, 5,008,838, Cl. 364-522.000.
Digital Equipment Corporation: *See*—
Bhandarkar, Dileep P.; Cutler, Dave; Cardoza, Wayne; Witek, Rich; and Orbits, Dave, 5,008,812, Cl. 364-200.000.
Chinnaswamy, Kumar; Gagliardo, Michael A.; Goodwin, Paul M.; Lynch, John J.; and Tessari, James E., 5,008,886, Cl. 371-40.200.
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O'Dea, Kevin J.; Bergman, Norman J.; Digiulio, Peter C.; Dolan, Donald T.; and Vanderpool, James L., 5,007,371, Cl. 118-680.000.
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Dijk, Jan V.; and Davies, Jenkin E., to Duphar International Research B.V. Aminoethyl oximes. 5,008,452, Cl. 564-256.000.
Dill, Walter R.: *See*—
Gardner, Tommy R.; Dill, Walter R.; Ford, William G. F.; and King, Karen L., 5,008,026, Cl. 252-8.553.
Dimitri, Mitchell S., to Westvaco Corporation. Submicron lignin dispersions. 5,008,378, Cl. 530-501.000.
Dinand, Pierre F.: *See*—
Beasley, John C.; and Dinand, Pierre F., 5,007,540, Cl. 206-581.000.
DiOrio, Mark L.: *See*—
Dutta, Vivek B.; Demmin, Jeffrey C.; DiOrio, Mark L.; and Ewanich, Jon T., 5,008,734, Cl. 357-74.000.
Director-General of Agency of Industrial Science and Technology: *See*—
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Klitsner, Daniel B., 5,007,876, Cl. 446-168.000.
Ditrich, Klaus; Hamprecht, Gerhard; Wuerzer, Bruno; Meyer, Norbert; Westphalen, Karl-Otto; and Laatsch, Hartmut, to BASF Aktiengesellschaft. Controlling undesirable plant growth using naphthindazole-4,9-quinones. 5,007,954, Cl. 71-90.000.
DiVito, Anthony M.; and Giesecke, Lee H., to Global Pumps, Inc. Air operated vacuum pump. 5,007,803, Cl. 417-137.000.
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Cook, William J.; Wisniewski, Karen L.; Dixit, Nagaraj S.; and Rao, Nandakumar S., 5,008,030, Cl. 252-106.000.
Dixon, David S.; and Schade, Nicholas, to United States of America, Navy. Universal ground adapter assembly. 5,007,847, Cl. 439-100.000.
Dixon, Peggy L.: *See*—
Dietlein, John E.; Kamis, Russel P.; and Dixon, Peggy L., 5,007,765, Cl. 404-74.000.
D'Luna, Lionel J.; Hibbard, Robert H.; and Parulski, Kenneth A., to Eastman Kodak Company. Real-time digital processor for producing full resolution color signals from a multi-color image sensor. 5,008,739, Cl. 358-21.00R.
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Kenney, Timothy J.; and D'Luna, Lionel J., 5,008,563, Cl. 307-269.000.
Doan, Phong D.; Upton, James E.; Hess, Douglas N.; Bass, Wayne R.; and Ufford, Keith A., to Medtronic, Inc. Connector for multiconductor pacing leads. 5,007,435, Cl. 128-784.000.
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Poelsler, Wolf-Dieter; and Baumann, Bernd, 5,008,843, Cl. 364-571.020.
Powell, Robert, 5,007,301, Cl. 74-557.000.
Dr. Karl Thomae GmbH: *See*—
Heckel, Armin; Nickl, Josef; Muller, Erich; Narr, Berthold; Weisenberger, Johannes; Eisert, Wolfgang; and Muller, Thomas, 5,008,290, Cl. 514-544.000.
Dolan, Donald T.: *See*—
O'Dea, Kevin J.; Bergman, Norman J.; Digiulio, Peter C.; Dolan, Donald T.; and Vanderpool, James L., 5,007,371, Cl. 118-680.000.

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Donenfeld, Henry; and Lemanis, Eduard, to BASF Australia Ltd. Transfer printing of natural and natural/synthetic fibres. 5,008,239, Cl. 503-227.000.
Donnelly, Michael J.: *See*—
Bu'lock, John D.; Sutherland, James K.; and Donnelly, Michael J., 5,008,383, Cl. 536-4.100.
Pritchard, David A.; and Donnelly, Michael J., 5,007,138, Cl. 24-23.00B.
Donnelly, Wilma M.: *See*—
Weder, Donald E.; Straeter, William F.; Straeter, Joseph G.; Craig, Franklin J.; Donnelly, Wilma M.; and Redditt, Jack W., 5,007,229, Cl. 53-397.000.
Donovan Brothers Incorporated: *See*—
Donovan, William S., 5,007,488, Cl. 175-59.000.
Donovan, William S., to Donovan Brothers Incorporated. Drilling nipple gas trap. 5,007,488, Cl. 175-59.000.
Dorman, Linneaus C.; and Meyers, Paul A., to Dow Chemical Company, The. Composites of unsintered calcium phosphates and synthetic biodegradable polymers useful as hard tissue prosthetics. 5,007,930, Cl. 623-16.000.
Doscher, Patrisha A., to Boeing Company, The. Low toxicity liquid solvent. 5,007,969, Cl. 134-38.000.
Doty, Roy E.: *See*—
Mason, Stanley I., Jr.; Fuller, Elizabeth L.; and Doty, Roy E., 5,007,651, Cl. 273-256.000.
Douglas, Ray C. Garbage collection device. 5,007,581, Cl. 232-43.200.
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Tanaka, Maki; Tojima, Teiichi; Dousako, Shun-ichi; and Tatsumi, Kiyoshi, 5,008,120, Cl. 426-74.000.
Dover Corporation: *See*—
Wilder, Paul R.; and Kesterman, James E., 5,007,468, Cl. 141-209.000.
Dow Chemical Company, The: *See*—
Dorman, Linneaus C.; and Meyers, Paul A., 5,007,930, Cl. 623-16.000.
Laughner, Michael K., 5,008,330, Cl. 525-67.000.
Meyer, Louis W.; Vanderhider, J. Alan; and Carswell, Robert, 5,008,033, Cl. 252-182.130.
Parker, Theodore L.; and Perettie, Donald J., 5,007,706, Cl. 350-76.340.
Soto, Jorge; Anand, Joginder N.; and Peffley, Richard D., 5,008,325, Cl. 524-504.000.
Thill, Bruce P.; and King, Bruce A., 5,008,347, Cl. 525-433.000.
Tucker, Benjamin W.; and Bhattacharjee, Debkumar, 5,008,299, Cl. 521-159.000.
Dow Corning Corporation: *See*—
Dennis, William E.; and VanWert, Bernard, 5,008,301, Cl. 522-13.000.
Dietlein, John E.; Kamis, Russel P.; and Dixon, Peggy L., 5,007,765, Cl. 404-74.000.
Halloran, Daniel J.; Kasprzak, Kenneth A.; Savastano, Stefano G.; and Swihart, Terence J., 5,008,424, Cl. 556-419.000.
Haluska, Loren A.; Michael, Keith W.; and Tarhay, Leo, 5,008,320, Cl. 524-361.000.
Kennan, Linda D.; Knapp, Theodore L.; Monroe, Carl M.; and Skostins, Olgerts, 5,008,305, Cl. 523-212.000.
Klimisch, Helen M.; and Malczewski, Regina M., 5,008,101, Cl. 424-59.000.
Kosal, Jeffrey A.; and Swihart, Terence J., 5,008,349, Cl. 525-477.000.
Lee, Chi-Long; and Gornowicz, Gerald A., 5,008,115, Cl. 424-486.000.
Meddaugh, Michael D., 5,008,154, Cl. 428-447.000.
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Doy, Toshiroh: *See*—
Saito, Kazuharu; Matsukura, Hiroyasu; Komase, Hiroshi; Tsuneda, Haruhiro; Watanabe, Junji; Saito, Tadao; Doy, Toshiroh; and Matsunaga, Kazuo, 5,007,209, Cl. 51-283.00R.
Doyle, A. Thomas; Tremulis, William S.; and McQueen, Colleen L., to Advanced Cardiovascular Systems, Inc. Catheter tip attitude controlling guide wire. 5,007,434, Cl. 128-772.000.
Drabowitch, Serge: *See*—
Trigon, Roland; Drabowitch, Serge; and Roger, Joseph, 5,008,677, Cl. 342-17.000.
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Dreesen, Franciscus M.: *See*—
van der Velden, Johnny; van Bergen, Theodorus F.; Simons, August L. H.; Colditz, Johannes K. E.; Ligtenberg, Martinus A. C.; and Dreesen, Franciscus M., 5,008,591, Cl. 313-524.000.
Dresser Industries, Inc.: *See*—
Coolidge, Robert B.; and Nguyen, David M., 5,007,493, Cl. 175-329.000.
Kernion, Mark C.; and Davies, Ben, deceased, 5,007,615, Cl. 251-368.000.
Ricles, Thomas D.; and Ward, Richard M., 5,007,344, Cl. 102-31.200.
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Wenteler, George L.; Pegel, Karl H.; Drews, Siegfried; and Kundig, Hans, 5,008,471, Cl. 568-729.000.
Drowley, Clifford I.: *See*—
Chiang, Shang-yi; Huang, Wen-Ling M.; Drowley, Clifford I.; and Voorde, Paul V., 5,008,210, Cl. 437-33.000.
Druet, Bernard; and Rochet, Gerald, to Norsolor (Orkem Group). Process for the manufacture of urea-formaldehyde resins containing melamine. 5,008,365, Cl. 528-230.000.
Du Pont Pixel Systems, Limited: *See*—
Trevett, Neil F.; and Wilson, Malcolm E., 5,008,754, Cl. 358-183.000.
Dubetsky, Lawrence J.: *See*—
Trapp, Richard E.; Hansen, Gary L.; Clay, Robert B.; Dubetsky, Lawrence J.; and Olney, Robert S., 5,007,973, Cl. 149-109.600.
Dubief, Claude: *See*—
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Dubs, Paul: *See*—
Meier, Hans R.; Evans, Samuel; and Dubs, Paul, 5,008,459, Cl. 568-46.000.
Duchon, Douglas, to Logitech S.A. Invertible trackball. 5,008,528, Cl. 250-221.000.
Dudley, Scott C.: *See*—
Look, David C.; Sewell, James S.; Mier, Millard G.; Sizelove, John R.; Walters, Dennis C.; and Dudley, Scott C., 5,008,542, Cl. 250-341.000.
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Dunagan, John E.; and Bernath, Stanley, to Larmco Security, Inc. Anti-intrusion window. 5,007,199, Cl. 49-13.000.
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Bywater, Robert J.; and Dupe, Robert J., 5,008,248, Cl. 514-23.000.
Duphar International Research B.V.: *See*—
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Goodley, George R.; Harman, Phillip R.; and Prather, Charles W., 5,007,193, Cl. 43-42.280.
Hanagan, Mary A., 5,008,393, Cl. 546-261.000.
Iqbal, Tahir; Cain, John H., Jr.; and Slosky, Jack J., 5,008,418, Cl. 556-112.000.
Lewis, Milton A., Jr.; Mason, Jeffrey S.; Swinford, Carson B.; and Wiseman, Timothy R., Sr., 5,007,112, Cl. 2-79.000.
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Durakon Industries, Inc.: *See*—
Oprea, John C., 5,007,671, Cl. 296-39.200.
Duran, John A., to Avibank Mfg., Inc. Releasable locking mechanism. 5,007,762, Cl. 403-341.000.
Durko nee Ponacz, Anna: *See*—
Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponacz, Anna; Eifert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo ; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.
Dutta, Vivek B.; Demmin, Jeffrey C.; DiOrio, Mark L.; and Ewanich, Jon T., to National Semiconductor Corporation. Stadium-stepped package for an integrated circuit with air dielectric. 5,008,734, Cl. 357-74.000.
Dutzmann, Stefan: *See*—
Klausener, Alexander; Kleefeld, Gerd; Berg, Dieter; Dutzmann, Stefan; and Hanbler, Gerd, 5,008,275, Cl. 514-334.000.
Dweck, Mark, to Colony Corporation. Transparent dial face watch with replaceable visual display. 5,008,869, Cl. 368-228.000.
Dye, John F., to Kendall Company, The. Device for applying compressive pressures against a patient's limb. 5,007,411, Cl. 128-64.000.
Dye, William M.: *See*—
Enright, Dorothy P.; Dye, William M.; Smith, F. Martin; and Perricone, Alphonse C., 5,007,489, Cl. 175-65.000.
Dyer, William R. Dive-plane. 5,007,871, Cl. 441-65.000.
E. F. Johnson Co.: *See*—
Conley, Jerry J.; and Mortensen, Gary B., 5,008,579, Cl. 310-303.000.
E. R. Squibb & Sons, Inc.: *See*—
Grover, Gary J.; and Bergey, James L., 5,008,284, Cl. 514-423.000.
Sedergran, Thomas C., 5,008,399, Cl. 548-413.000.

Ealick, Steve E.: *See—*
Secrist, John A., III; Montgomery, John A.; Ealick, Steve E.; Erion, Mark D.; and Guida, Wayne C., 5,008,265, Cl. 514-258.000.
Secrist, John A., III; Montgomery, John A.; Ealick, Steve E.; Erion, Mark D.; and Guida, Wayne C., 5,008,270, Cl. 514-258.000.

Easson, Donald D., Jr.: *See—*
Rha, ChoKyun; Pradipasena, Pasawadee; Nakamura, TetsuHisa; Easson, Donald D., Jr.; and Sinskey, Anthony J., 5,008,108, Cl. 424-401.000.

East Short Chemical Company: *See—*
Filius, Larry, 5,008,464, Cl. 568-656.000.

Eastman Kodak Company: *See—*
Anderson, Larry; Batts, Gregory N.; Purbrick, Malcolm D.; Scriven, Clare E.; and Jones, Stephen A., 5,008,358, Cl. 526-292.300.
Bryan, Philip S.; Lambert, Patrick M.; Towers, Christine M.; and Jarrold, Gregory S., 5,008,034, Cl. 252-301.40F.
Chari, Krishnan; Bowman, Wayne A.; and Thomas, Brian, 5,008,179, Cl. 430-546.000.
Columbus, Richard L., 5,007,892, Cl. 494-17.000.
DeCecca, Michael L.; Kowalczyk, Michael S.; Gray, Thomas W.; and Partridge, Paul W., 5,008,538, Cl. 250-324.000.
Diehl, Conrad; Smart, David C.; and Stiehler, Wayne E., 5,008,692, Cl. 354-173.100.
D'Luna, Lionel J.; Hibbard, Robert H.; and Parulski, Kenneth A., 5,008,739, Cl. 358-21.00R.
Giannetti, John; Sleve, Jerry F.; and Shea, Robert H., 5,007,627, Cl. 271-35.000.
Hyche, Kenneth W.; and Gose, William C., 5,007,961, Cl. 106-18.000.
Kenney, Timothy J.; and D'Luna, Lionel J., 5,008,563, Cl. 307-269.000.
Kiehl, Gary G.; and Surash, Robert G., 5,008,017, Cl. 210-710.000.
Merkel, Paul B.; and Hoke, David, 5,008,180, Cl. 430-552.000.
Moore, William E., 5,008,914, Cl. 378-108.000.
Mullen, Charles E.; and Crater, Arthur H., 5,007,760, Cl. 403-13.000.
Munz, Rolf, 5,007,797, Cl. 414-790.800.
Noble, Stephen A., 5,008,697, Cl. 354-413.000.
Robello, Douglas R.; Ulman, Abraham; Urankar, Edward J.; and Willand, Craig S., 5,008,043, Cl. 252-582.000.
Robello, Douglas R.; and Ulman, Abraham, 5,008,369, Cl. 528-391.000.
Sangregory, Jude A.; and DiRisio, Anthony, 5,007,859, Cl. 439-500.000.
Shaw, James D., 5,008,082, Cl. 422-65.000.
Surash, Robert G.; and Kiehl, Gary G., 5,008,020, Cl. 210-751.000.
Van Nostrand, Lance, 5,008,752, Cl. 358-160.000.

Eastwell, Kenneth C.: *See—*
Bassi, Pawan K.; Eastwell, Kenneth C.; Goudey, James S.; and Spencer, Mary E., 5,008,091, Cl. 423-245.100.

Easyfax, Inc.: *See—*
Cleghorn, Monica R., 5,008,928, Cl. 379-100.000.

Eaton Corporation: *See—*
Holmquist, Ralph E.; and Janson, David A., 5,007,886, Cl. 475-231.000.

Eaton Leonard Technologies, Inc.: *See—*
Mundy, David J., 5,008,555, Cl. 250-560.000.

Ebata, Yoshikazu: *See—*
Takenoya, Hideaki; and Ebata, Yoshikazu, 5,007,357, Cl. 112-103.000.

Ebbing, Charles E.; and Neville, Donald G., to Carrier Corporation. Silencer for a centrifugal compressor. 5,007,499, Cl. 181-258.000.

Ebel, Klaus: *See—*
Koehler, Hermann; Ebel, Klaus; Karn, Helmut; and Taubitz, Christof, 5,008,398, Cl. 548-342.000.

Eberle, Jurg; and Stauber, Hans-Ulrich, to Ferag AG. Apparatus for conveying substantially flat products, especially printed products. 5,007,629, Cl. 271-277.000.

Ebersole, Larry W. Head care station and kit and method for reclining the occupant of a wheelchair against a head support. 5,007,118, Cl. 4-515.000.

Ebinuma, Ryuichi; Hattori, Yoshifumi; and Ichihashi, Hiroo, to Canon Kabushiki Kaisha. Ink jet recording apparatus capable of mounting an ink tank and ink tank for use in same. 5,008,688, Cl. 346-140.00R.

Ebisawa, Tsuneo: *See—*
Ozaki, Seishiro; Asahi, Nobuo; and Ebisawa, Tsuneo, 5,008,504, Cl. 200-401.000.

EC Erdolchemie GmbH: *See—*
Schleppinghoff, Bernhard; Kohler, Hans-Dieter; Gabel, Christian; and Scheef, Hans-Volker, 5,008,466, Cl. 568-697.000.

ECC International Limited: *See—*
Brown, Alan J.; James, Roger; and Glasson, Nigel P., 5,008,220, Cl. 501-81.000.

Eckart, Donald W.: *See—*
Branovich, Louis E.; Eckart, Donald W.; Smith, Bernard; and Freeman, Gerard, 5,007,874, Cl. 445-50.000.

Ecsery, Zoltan; Knoll, Jozsef; Somfai, Eva; Torok, Zoltan; Szinnyei, Eva; and Mozsolits, Karoly, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Pesticidal method. 5,008,292, Cl. 514-654.000.

Edes, Bela: *See—*
Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponacz, Anna; Eifert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo ; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.

Edmond, John A.; Waltz, Douglas G.; Mitchell, Muni M.; Sedigh, Mohammad; and Hamerski, Roman, to General Instrument Corporation; and Cree Research, Inc. Packaged diode for high temperature operation. 5,008,735, Cl. 357-74.000.

Edmondson, Sherburne M.; and Luna, Carlos E., to Sequoia Turner Corporation. Blood diluent for red blood cell analysis. 5,008,202, Cl. 436-18.000.

Edwards, John G.; Han, Wesley W.; and Ali, Yusuf, to Alcon Laboratories, Inc. Method for enhancing solubility of trimethoprim with sodium sulfacetamide, and synergistic pharmaceutical compositions derived therefrom. 5,008,255, Cl. 514-155.000.

Edwardson, David: *See—*
Shapiro, Alan F., 5,007,502, Cl. 182-155.000.

Effland, John E.; Gipson, John M.; Shaffer, David B.; and Webber, John C., to Interferometrics Incorporated. Method and system for locating an unknown transmitter. 5,008,679, Cl. 342-353.000.

Efrat Future Technology Ltd.: *See—*
Misholi, Boaz, 5,008,926, Cl. 379-89.000.

Egley, Bert; and Hanson, Richard A., to New SD, Inc. Method and apparatus for producing preload of an accelerometer assembly. 5,007,290, Cl. 73-517.00R.

Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji; Shimizu, Sadami; Sato, Masakatsu; and Tamabayashi, Hanzo, to Tosoh Corporation. Process for producing tetrabromobisphenol A. 5,008,469, Cl. 568-722.000.

Ehl, Klaus: *See—*
Uhrig, Heinz; Ehl, Klaus; and Deubel, Reinhold, 5,008,442, Cl. 560-149.000.

Eichenauer, Ulrich, to BASF Aktiengesellschaft. Preparation of 4,4''-dihydroxyterphenyl. 5,008,472, Cl. 568-730.000.

Eichhorn, Werner: *See—*
Hopfensperger, Reinhold; and Eichhorn, Werner, 5,007,801, Cl. 416-223.00R.

Eifert, Gyula: *See—*
Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponacz, Anna; Eifert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo ; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.

Eisai Co., Ltd.: *See—*
Yamauchi, Hiroshi; Sugiyama, Isao; Saito, Isao; Nomoto, Seiichiro; Kamiya, Takashi; Machida, Yoshimasa; and Negi, Shigeto, 5,008,260, Cl. 514-202.000.

Eisele, Thomas A.: *See—*
Kobes, Gerald W.; and Eisele, Thomas A., 5,007,334, Cl. 99-483.000.

Eisert, Wolfgang: *See—*
Heckel, Armin; Nickl, Josef; Muller, Erich; Narr, Berthold; Weisenberger, Johannes; Eisert, Wolfgang; and Muller, Thomas, 5,008,290, Cl. 514-544.000.

Eizenhofer, Alfons; and Von Harten, Georg, to U.S. Philips Corporation. Communication system. 5,008,883, Cl. 370-95.100.

Eki, Toshio: *See—*
Yoshida, Takao; Ikeda, Toshio; Douke, Takhiro; and Eki, Toshio, 5,008,773, Cl. 361-187.000.

Elango, Varadaraj; and Davenport, Kenneth G., to Hoechst Celanese Corporation. Synthesis of 2-(4-hydroxyphenoxy) alkanoic acid esters. 5,008,439, Cl. 560-61.000.

Eleazer, Prince B.: *See—*
Mayotte, Leo G.; and Eleazer, Prince B., 5,007,823, Cl. 432-14.000.

Electro-Consultants, Inc.: *See—*
Woloszyk, Leonard T., 5,008,652, Cl. 340-605.000.

Electronic Research Associates, Inc.: *See—*
Palinkas, John M., 5,008,788, Cl. 362-231.000.

Elf Aquitaine Norge A/S: *See—*
Legris, Bernard; Oppedal, Magne; and Traonmilin, Eric, 5,007,769, Cl. 405-195.000.

Elf France: *See—*
Laurent, Dominque; Fortunato, Gerard; Damin, Bernard; and Napoleon, Marcel, 5,007,733, Cl. 356-70.000.
Trema, Daniel, 5,007,497, Cl. 180-219.000.

Eli Lilly and Company: *See—*
Barnett, Charles J.; and Wilson, Thomas M., 5,008,391, Cl. 546-243.000.

Elizabeth Arden Co., Division of Conopco, Inc.: *See—*
Zecchino, Julius R.; Krishnaswamy, Natrajan; Clement, Pamela A.; and Vargas, Anthony, 5,008,100, Cl. 424-59.000.

Elkem a/s: *See—*
Anderssen, Sverre, 5,007,480, Cl. 166-292.000.

Ellard, Terence R., to Real World Design & Development Company. Syringe adapted to prevent needle sticks. 5,007,903, Cl. 604-195.000.

Ellena: *See—*
Werly, Marc, 5,007,837, Cl. 433-226.000.

Ellingsworth, Larry: *See—*
Bentz, Hanne; Ellingsworth, Larry; and Armstrong, Rosa, 5,008,240, Cl. 514-2.000.

Ellrich, Klaus: *See—*
Gasser, Oswald; Guggenberger, Rainer; and Ellrich, Klaus, 5,008,303, Cl. 522-64.000.

Elmstrom, Gary W.: *See—*
Gray, Dennis J.; and Elmstrom, Gary W., 5,007,198, Cl. 47-58.000.

Eltec Instruments, Inc.: *See—*
Keller, Hans J.; and Kuster, Walter A., 5,007,432, Cl. 128-736.000.

Eltoukhy, Abelshafy A.; and Gluss, David H., to Actel Corporation. Method of programming anti-fuse element. 5,008,855, Cl. 365-96.000.

Emhart Industries, Inc.: *See—*
Kidd, Roy E.; Andrejasich, Raymond J.; Michel, Hilary; and Slocum, Laurence S., 5,008,653, Cl. 340-620.000.

Emig, Gerhard: *See—*
Beck, Horst-Philipp; Emig, Gerhard; Wiesgickl, Gunther; Burg, Karlheinz; and Muck, Karl-Friedrich, 5,008,463, Cl. 568-487.000.

Emmett, Robert C., Jr.; and O'Connor, Lawrence T., to Envirotech Corporation. Apparatus for biological processing of metal-containing ores. 5,007,620, Cl. 266-168.000.

Empresa Brasileira de Compressores S/A - Embraco: *See—*
Da Costa, Caio N. F. N., 5,007,813, Cl. 418-63.000.

Emulsion Technology, Inc.: *See—*
Weete, John D.; and Griffith, George L., 5,008,037, Cl. 252-314.000.

Emura, Masaharu; and Kobayashi, Takehiro, to Ryobi Ltd. Water depth measuring device for a fishing reel. 5,007,601, Cl. 242-223.000.

Endo, Atsushi: *See—*
Tsutsumi, Michinari; Endo, Atsushi; and Yada, Toshio, 5,007,984, Cl. 156-656.000.

Endo, Mamoru: *See—*
Hamatsu, Mashiro; and Endo, Mamoru, 5,008,898, Cl. 375-1.000.

Endo, Seiji: *See—*
Yamamura, Takeshi; Endo, Seiji; Kawauchi, Kazuyuki; and Korenaga, Hiroki, 5,008,728, Cl. 357-45.000.

Endoh, Fumio, to Pioneer Electronic Corporation. CATV transmission system using scrambled signals. 5,008,934, Cl. 380-15.000.

Energy Conversion Devices, Inc.: *See—*
Czubatyj, Wolodymyr; and Himmler, Ronald, 5,008,617, Cl. 324-158.00R.

Engbersen, Antonius P.: *See—*
Ahmadi, Hamid; Beha, Johannes G.; Denzel, Wolfgang E.; Engbersen, Antonius P.; Luijten, Ronald P.; Murphy, Charles A.; and Port, Erich, 5,008,878, Cl. 370-60.000.

Engel, Dieter; Mondt, Josef; and Zimmerschied, Klaus, to Hoechst Aktiengesellschaft. Aqueous dispersions for the preparation of cross-linkable coatings. 5,008,155, Cl. 428-463.000.

Engelhard Corporation: *See—*
Taylor, Dennis R.; and Ungermann, Charles B., 5,008,226, Cl. 502-81.000.
Taylor, Dennis R.; and Ungermann, Charles B., 5,008,227, Cl. 502-83.000.

England, Raymond B., Jr. Window cleaning apparatus with rotatable head. 5,007,753, Cl. 401-139.000.

Englert, Heiner; and Martin, Bernhard, to Michael Weinig Aktiengesellschaft. Pressing apparatus for a processing machine. 5,007,469, Cl. 144-252.00R.

Englund, Richard L.; and Schwartz, Thomas W., to Minnesota Mining and Manufacturing Company. Compounding, glazing or polishing pad. 5,007,128, Cl. 15-230.160.

Engstrand, Per O.; Hammar, Lars-Ake; Htun, Myat T.; and Pettersson, Rune L., to STFI. Method of reducing the energy consumption at the refining of cellulose containing material. 5,007,985, Cl. 162-26.000.

Enhorning, Goran. Female incontinence device. 5,007,894, Cl. 600-29.000.

Enoguchi, Yuji; Natsuhara, Toshiya; and Yamamoto, Masashi, to Minolta Camera Kabushiki Kaisha. Monocomponent developing device. 5,008,708, Cl. 355-259.000.

Enright, Dorothy P.; Dye, William M.; Smith, F. Martin; and Perricone, Alphonse C., to Baker Hughes Incorporated. Drilling fluid methods and composition. 5,007,489, Cl. 175-65.000.

enviroGuard, Inc.: *See—*
Conner, Jesse R.; and Rieber, Roy S., 5,008,021, Cl. 210-751.000.

Environwear, Inc.: *See—*
Brekkestran, Kevin L.; and Batcheller, Barry D., 5,008,517, Cl. 219-211.000.

Envirotech Corporation: *See—*
Emmett, Robert C., Jr.; and O'Connor, Lawrence T., 5,007,620, Cl. 266-168.000.

Erana, Agustin A. Air impact sand-box moulding machine. 5,007,477, Cl. 164-169.000.

Erb, Gary H. Method of decreasing air/fuel leakage in a carburetor. 5,007,166, Cl. 29-888.011.

Erickson, Phillip J.; Crossman, Janet L.; Heacock, Gregory L.; and Mainster, Martin A., to Ocular Instruments, Inc. Wide angle ophthalmic lens. 5,007,729, Cl. 351-219.000.

Erion, Mark D.: *See—*
Secrist, John A., III; Montgomery, John A.; Ealick, Steve E.; Erion, Mark D.; and Guida, Wayne C., 5,008,265, Cl. 514-258.000.
Secrist, John A., III; Montgomery, John A.; Ealick, Steve E.; Erion, Mark D.; and Guida, Wayne C., 5,008,270, Cl. 514-258.000.

Erkens, Leonardus J. H.; Algra, Gerben P.; Geurts, Herman J. J. M.; and Gielkens, Hubertus P. A., to Ciba-Geigy Corporation. Novel process for the preparation of lead molybdate pigments and novel lead molybdate pigments. 5,007,963, Cl. 106-433.000.

Ermanco Incorporated: *See—*
Fazzina, Francis P.; and Hollister, Guy G., 5,007,526, Cl. 198-787.000.

Erwin Sick GmbH Optik-Elektronik: *See—*
Ball, Hans-Klaus, 5,008,530, Cl. 250-221.000.

ESPE Stiftung & Co. Produktions- und Vertriebs KG: *See—*
Gasser, Oswald; Guggenberger, Rainer; and Ellrich, Klaus, 5,008,303, Cl. 522-64.000.

Esquivel, Agerico L., to Texas Instruments Incorporated. Non-volatile memory. 5,008,722, Cl. 357-23.500.

Etat Francais: *See—*
Guichard, Jacques; Buchner, Georges; and Labat, Jacques, 5,008,924, Cl. 379-53.000.

Ethicon, Inc.: *See—*
Bezwada, Rao S.; Newman, Hugh D., Jr.; and Shalaby, Shalaby W., 5,007,923, Cl. 606-231.000.
Chen, Chao; and Taylor, Arthur, 5,007,922, Cl. 606-228.000.

Ethyl Corporation: *See—*
Hussain, Saadat, 5,008,477, Cl. 570-208.000.
Nalepa, Christopher J.; Presswood, J. Kenneth; and Knapp, Gordon G., 5,008,453, Cl. 564-271.000.
Stahly, G. Patrick, 5,008,417, Cl. 556-104.000.
Stahly, G. Patrick, 5,008,425, Cl. 556-436.000.

Eurand Italia S.p.A.: *See—*
Calanchi, Massimo; Gentilini, Leonardo; and Marconi, Marco, 5,008,117, Cl. 424-494.000.

Evans, Daniel D.: *See—*
Cox, Laurence C.; Dugan, Raymond; Evans, Daniel D.; Griffith, Robert; Handley, Terry L.; and Leeper, Jeffrey J., 5,007,318, Cl. 83-425.200.

Evans, Dennis E.; and Liddell, Keith S., to Metprotech Limited. Process for simultaneously leaching and fine milling a subdivided source material. 5,007,589, Cl. 241-21.000.

Evans, James A., to Stryker Corporation. Single blade cutter for arthroscopic surgery. 5,007,917, Cl. 606-170.000.

Evans, Samuel: *See—*
Meier, Hans R.; Evans, Samuel; and Dubs, Paul, 5,008,459, Cl. 568-46.000.

Evensen, David P., to Nimlock Company. Portable partition system. 5,007,473, Cl. 160-135.000.

Everest Medical Corporation: *See—*
Rydell, Mark A., 5,007,908, Cl. 606-47.000.

Evers, Robert C.; Dang, Thuy D.; and Moore, D. Roger, to United States of America, Air Force. Graft copolymers of poly(p-phenylene benzbisimidazole). 5,008,346, Cl. 525-426.000.

Ewanich, Jon T.: *See—*
Dutta, Vivek B.; Demmin, Jeffrey C.; DiOrio, Mark L.; and Ewanich, Jon T., 5,008,734, Cl. 357-74.000.

Ewing, Joan R.; and Wiedrich, Donald E., to Xerox Corporation. Simultaneous charging and exposure for pictorial quality. 5,008,707, Cl. 355-220.000.

Excel Industries, Inc.: *See—*
D'Hoore, Terence P.; and Smith, Mark L., 5,007,201, Cl. 49-348.000.

Exchange System Limited Partnership, The: *See—*
Hamilton, Scott B.; and Rosenow, Michael J., 5,008,936, Cl. 380-50.000.

Exion Technology, Inc.: *See—*
Hong, Gilbert H., 5,008,156, Cl. 428-506.000.

Express Foods Group Limited: *See—*
Bottomley, Robin C., 5,008,376, Cl. 530-366.000.

Exxon Chemical Patents Inc.: *See—*
Chang, Main, 5,008,228, Cl. 502-111.000.
Goguelin, Michel, 5,008,306, Cl. 523-220.000.
Stehling, Ferdinand C., 5,008,204, Cl. 436-85.000.
Williams, Dennis A.; Horton, Roger L.; Newlove, John C.; and Chumley, Robert E., 5,007,481, Cl. 166-300.000.

Fabbri, William C., to Genlyte, Inc. Fluorescent-type fixture having removable fold-out lamp sockets. 5,008,790, Cl. 362-220.000.

Faber, Edward M.: *See—*
Kinson, Philip L.; and Faber, Edward M., 5,008,145, Cl. 428-288.000.

Faber, Michael A.: *See—*
King, David L.; Cooper, Michael D.; and Faber, Michael A., 5,008,468, Cl. 568-697.000.

Facile Holdings, Inc.: *See—*
Weeks, Herman D., Jr.; and Cella, Robert, 5,008,489, Cl. 174-36.000.

Falconieri, Remo; and Uggetti, Sergio, to Ing. C. Olivetti & C., S.p.A. Cartridge including tension means for a typewriter correction ribbon. 5,007,749, Cl. 400-208.000.

Fang, Que-Tsang; and Wei-Berk, Caroline, to Aluminum Company of America. Production of metal matrix composites reinforced with polymer fibers. 5,008,158, Cl. 428-614.000.

Fanuc Ltd.: *See—*
Mizuno, Tohru; and Ito, Takayuki, 5,008,834, Cl. 364-513.000.
Torii, Nobutoshi; Mizuno, Hitoshi; and Muraki, Katsuyuki, 5,008,832, Cl. 364-513.000.

Fanuc Ltd: *See—*
Seki, Masaki; Samukawa, Koji; and Hanaoka, Osamu, 5,008,806, Cl. 364-191.000.

Farmerie, Joseph G., to Milwaukee Electric Tool Corporation. Tensioner release and mechanism for belt sanders. 5,007,205, Cl. 51-170.0EB.

Farnam Companies, Inc.: *See—*
Warner, William B., 5,008,107, Cl. 424-84.000.

Farrall, George A.; and Hansen, Steven D., to General Electric Company. X-ray tube high voltage cable transient suppression. 5,008,912, Cl. 378-91.000.

Farrand, A. Brady: *See—*
Bly, Sara A.; Farrand, A. Brady; Hodges, Jeffery D.; Kupfer, Michael D.; Lewis, Brian T.; Maybury, William J.; Tallan, Michael L.; and Tom, Stephen B., 5,008,853, Cl. 364-900.000.

Farrar, James: *See*—
Goodwin, John D.; Goodwin, Samuel D.; House, Wilford; and Farrar, James, 5,008,839, Cl. 364-550.000.

Farrell, Frank C. Dental articulator apparatus. 5,007,829, Cl. 433-61.000.

Fauchard, Jean-Pierre: *See*—
Daniel, Jean-Pierre; and Fauchard, Jean-Pierre, 5,007,736, Cl. 356-152.000.

Favre, Eric; Masek, Petr; and Truchement, Bernard, to Nestec S.A. Filter for use in a cartridge for the preparation of a beverage. 5,008,013, Cl. 210-482.000.

Favstritsky, Nicolai A.; and Nulph, Robert J., to Great Lakes Chemical Corporation. Flame retardant PVC resin compositions. 5,008,323, Cl. 524-469.000.

Fazzina, Francis P.; and Hollister, Guy G., to Ermanco Incorporated. Conveyor curve and live roller, line shaft conveyor system incorporating same. 5,007,526, Cl. 198-787.000.

Feder, Joseph: *See*—
Connolly, Daniel T.; and Feder, Joseph, 5,008,196, Cl. 435-240.200.

Federal-Mogul Corporation: *See*—
Matzelle, Albert J.; and Scheerer, William E., 5,007,746, Cl. 384-420.000.

Feigenbaum, Barry A.: *See*—
Christopher, Kenneth W., Jr.; Feigenbaum, Barry A.; Kim, Jin; and Love, Douglas C., 5,008,820, Cl. 364-200.000.

Feintool International Holding: *See*—
Haack, Johannes, 5,007,264, Cl. 72-10.000.

Feist, Harold E. Framing system and component parts thereof. 5,007,188, Cl. 40-152.000.

Feldman, Alfred P., to United States of America, Health and Human Services. Method for producing high quality chemical structure diagrams. 5,008,831, Cl. 364-496.000.

Feldman, Michael: *See*—
Meller, Moshe; and Feldman, Michael, 5,007,832, Cl. 433-126.000.

Fenn, Ronald S.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Calderone, Nicholas; and Fenn, Ronald S., 5,008,437, Cl. 560-35.000.

Ferag AG: *See*—
Eberle, Jurg; and Stauber, Hans-Ulrich, 5,007,629, Cl. 271-277.000.

Fernando, Gerard M. X.; and Giardina, Aldo, to U.S. Philips Corporation. Method and apparatus for picture motion measurement using picture correlation as a function of displacement. 5,008,744, Cl. 358-105.000.

Fersht, Samuel N.: *See*—
Stewart, Robert E.; and Fersht, Samuel N., 5,007,289, Cl. 73-510.000.

Feustel, James R.: *See*—
Abramczyk, William M.; Hull, Edward I.; and Feustel, James R., 5,007,662, Cl. 280-739.000.

Fiacco, Richard A.: *See*—
Strauss, Richard F.; Fiacco, Richard A.; Bordbar, Hosrow T.; Chen, Caesar C.; and Quiroz, David, 5,008,490, Cl. 174-36.000.

Fiat Auto S.p.A.: *See*—
Di Giusto, Nevio, 5,007,668, Cl. 292-216.000.
Margiaria, Giorgio; and Brizio, Giuseppe, 5,008,063, Cl. 264-297.200.
Nakayama, Kiyoshi; and Luigi, Darbesio, 5,008,603, Cl. 318-568.100.

Fick, Larry D., to New Visions Corporation. Water bottle insulator. 5,007,566, Cl. 224-32.00R.

Fiebig, Carolyn A. B.; Fuqua, Mike R.; Gursahaney, Suresh K.; Margosian, Gregg M.; and Weiss, Mark H., to International Business Machines Corporation. Real time, fail safe process control system and method. 5,008,805, Cl. 364-184.000.

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Saunders, Anne L.; and Fields, John G., 5,007,196, Cl. 43-112.000.

Figueroa, Luis A.: *See*—
Lombard, Jose O., 5,007,794, Cl. 414-542.000.

Filius, Larry, to East Short Chemical Company. Anisole bromination. 5,008,464, Cl. 568-656.000.

Finley, John W.: *See*—
Klemann, Lawrence P.; Finley, John W.; and Scimone, Anthony, 5,008,126, Cl. 426-611.000.

Fiorelli, Frank: *See*—
Zezza, Louis J.; and Fiorelli, Frank, 5,007,460, Cl. 138-89.000.

Fischbach, Manfred: *See*—
Dahle, Olof; and Fischbach, Manfred, 5,007,487, Cl. 175-57.000.

Fischer, Michael A.; Cox, William M.; and McDougall, Floyd H., to Datapoint Corporation. LAN with interoperative multiple operational capabilities. 5,008,879, Cl. 370-85.200.

Fischer, Rolf; Frank, Juergen; Merger, Franz; and Weyer, Hans-Juergen, to BASF Aktiengesellschaft. Preparation of 1,4-butanediol and tetrahydrofuran. 5,008,408, Cl. 549-429.000.

Fisher, Michael H.; Wyvratt, Matthew J.; and Mrozik, Helmut, to Merck & Co., Inc. Avermectins with a cleaved furan ring and an 8a hydroxy group. 5,008,250, Cl. 514-30.000.

Fishman, Sam; and Marchese, Michael J. Body dryer. 5,007,182, Cl. 34-90.000.

Fishman, Sidney; and Lembeck, William, to New York University Medical Center. Structure for enhanced retention of artificial limbs and method of fabrication. 5,007,937, Cl. 623-34.000.

Fittings for Industry S.r.l.: *See*—
Babini, Ezio, 5,007,946, Cl. 55-501.000.

Fletcher, Robert M.; Kuo, Chihping; Osentowski, Timothy D.; and Robbins, Virginia M. Light-emitting diode with an electrically conductive window. 5,008,718, Cl. 357-17.000.

Flexsteel Industries, Inc.: *See*—
Meier, Louis M.; and Berning, Lloyd G., 5,007,681, Cl. 297-440.000.

Flight Dynamics, Inc.: *See*—
Wood, Robert S.; and Thomas, Mark A., 5,007,711, Cl. 350-174.000.

FLOS S.p.A.: *See*—
Copeland, Stephan, 5,008,793, Cl. 362-413.000.

Flotow, Richard A., to Dana Corporation. Adjustable hysteresis damper. 5,007,517, Cl. 192-106.100.

Flueli, Adolf: *See*—
Busenhart, Peter; Schneeberger, Ruedi; Holbein, Erwin; Wirz, Armin; Flueli, Adolf; and Maier, Hansueli, 5,007,595, Cl. 242-46.400.

Flynn, Edward R.: *See*—
Overton, William C., Jr.; van Hulsteyn, David B.; and Flynn, Edward R., 5,008,622, Cl. 324-248.000.

FMC Corporation: *See*—
Plummer, Ernest L., 5,008,277, Cl. 514-337.000.

Focke & Co., (GmbH & Co.): *See*—
Focke, Heinz; and Balmer, Oskar, 5,007,522, Cl. 198-468.800.

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Unewisse, Heinz; and Foering, Herbert, 5,007,667, Cl. 285-382.200.

Fogg, Richard G., Jr.; and Irwin, John W., to International Business Machines Corporation. Data processing system with multi-access memory. 5,008,816, Cl. 364-200.000.

Foglieni, Carlo: *See*—
Bovisio, Cipriano; Foglieni, Carlo; Fumagalli, Fulgenzio; Morlotti, Norberto; and Palladini, Mario, 5,007,665, Cl. 285-334.000.

Foley, Charles F., to InnoLand, Inc. Selectively mountable basketball hoop structure. 5,007,637, Cl. 273-1.50R.

Fonneland, Nils J.: *See*—
Brandstetter, Robert W.; Pernick, Benjamin J.; Fonneland, Nils J.; and Caputi, Stephen J., 5,008,851, Cl. 364-807.000.

Ford Motor Company: *See*—
Abramczyk, William M.; Hull, Edward I.; and Feustel, James R., 5,007,662, Cl. 280-739.000.
Clark, Walter F.; and Chen, Bor-Dong, 5,008,824, Cl. 364-431.050.
Goran, James L., 5,007,779, Cl. 411-48.000.
Wakeling, Robert, 5,007,395, Cl. 123-337.000.

Ford New Holland, Inc.: *See*—
Bulgrien, Garth H., 5,007,299, Cl. 74-335.000.
Schnader, Llewellyn R., 5,007,787, Cl. 414-412.000.

Ford, William G. F.: *See*—
Gardner, Tommy R.; Dill, Walter R.; Ford, William G. F.; and King, Karen L., 5,008,026, Cl. 252-8.553.

Forrestal, Joseph M.: *See*—
Saunders, Raymond L.; and Forrestal, Joseph M., 5,007,814, Cl. 425-3.000.

Forsyth, Allen P., to Atlas Copco Construction and Mining Holding AB. Hydraulically-actuated controller for reel drive. 5,007,599, Cl. 242-86.510.

Forsyth, Donald G. W.; Marshall, Robert W.; and Thompson, Alan M., to British Petroleum Co. p.l.c. Offshore oil production system. 5,007,482, Cl. 166-345.000.

Fortunato, Gerard: *See*—
Laurent, Dominque; Fortunato, Gerard; Damin, Bernard; and Napoleon, Marcel, 5,007,733, Cl. 356-70.000.

Fosbol, Peder; Ullum, Henrik; and Korremann, Birgitte, to Atlas Industries A/S. Method for a continuous hydrolyzing of keratinaceous materials. 5,008,375, Cl. 530-357.000.

Foster, Jeffrey P. Support rack for bicycles and the like. 5,007,567, Cl. 224-42.130.

Fowler, Ronald R.: *See*—
Spear, Kenneth J.; and Fowler, Ronald R., 5,007,598, Cl. 242-86.200.

Foxboro Company, The: *See*—
Jeannotte, Anthony C.; and Gilby, Anthony C., 5,007,740, Cl. 356-436.000.

Franc, John. Infant shade apparatus. 5,007,674, Cl. 297-184.000.

Franckowiak, Gerhard; Stoltefuss, Jurgen; Bechem, Martin; Gross, Rainer; Kayser, Michael; Hebisch, Siegbert; and Schramm, Matthias, to Bayer Aktiengesellschaft. Circulation-active fluoromethoxyphenyl dihydropyridine compounds. 5,008,279, Cl. 514-354.000.

Frank, Juergen: *See*—
Fischer, Rolf; Frank, Juergen; Merger, Franz; and Weyer, Hans-Juergen, 5,008,408, Cl. 549-429.000.

Franklin, James: *See*—
Wairaevens, Rene ; Franklin, James; and Yernaux, Jean-Marie, 5,008,474, Cl. 570-168.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
Theurer, Josef, 5,007,349, Cl. 104-12.000.
Theurer, Josef, 5,007,350, Cl. 104-12.000.

Fraser, Edward C.: *See*—
More, Henry S.; Fraser, Edward C.; and Bulduc, Lawrence R., 5,008,664, Cl. 340-854.000.

Fraser, Howard H., Jr.; and Weldon, Mark P., to Carrier Corporation. Slotted rotor lubrication system. 5,007,808, Cl. 417-368.000.

Fraser, Howard H., Jr.; and Barito, Thomas R., to Carrier Corporation. Scroll compressor with unitary crankshaft, upper bearing and counterweight. 5,007,810, Cl. 417-410.000.

Fray, Michael J.: *See*—
Cooper, Kelvin; and Fray, Michael J., 5,008,263, Cl. 514-220.000.

Fred Arbogast Company, Inc.: *See—*
Coody, Archibald S., 5,007,194, Cl. 43-42.290.
Fredell, Jan, to ABB Atom AB. Device for cooling a heat-generating member. 5,008,069, Cl. 376-299.000.
Freeburg, Thomas A.; and White, Richard E., to Motorola, Inc. Encryption apparatus. 5,008,938, Cl. 380-50.000.
Freed, W. Wayne; and Smith, Robert M., to Synthetic Industries, Inc. Shaped barrier for erosion control and sediment collection. 5,007,766, Cl. 405-24.000.
Freeman, Carol A. Purse with reminder device. 5,007,470, Cl. 150-114.000.
Freeman, Gerard: *See—*
Branovich, Louis E.; Eckart, Donald W.; Smith, Bernard; and Freeman, Gerard, 5,007,874, Cl. 445-50.000.
Fremuth, Dietmar R. A.; Rogers, Alan E.; and Zahner, John C., to Mobil Oil Corporation. Methanol-gas saturator for catalytic conversion system. 5,008,088, Cl. 422-234.000.
Frenzel, Robert A.: *See—*
Scobie, William B.; and Frenzel, Robert A., 5,007,330, Cl. 92-120.000.
Freudenberg, Enrique: *See—*
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Sendhoff, Norbert; and Freudenberg, Enrique, 5,008,321, Cl. 524-378.000.
Fries, William J.; Kleinschnitz, Donald; and Nelson, T. Craig, to Storage Technology Corporation. Consolidation of commands in a buffered input/output device. 5,008,808, Cl. 364-200.000.
Fritts, Monty; and Myers, Darren J. Inflatable shelter. 5,007,212, Cl. 52-2.180.
Fritz, Ronald E.: *See—*
Asmussen, Jes; and Fritz, Ronald E., 5,008,506, Cl. 219-10.55M.
Frogget, Brent C.: *See—*
Chern, Mao-Jin; Smith, Ronald T.; and Frogget, Brent C., 5,007,690, Cl. 350-3.680.
Fry, Trenton. Replaceable skeg for a marine propulsion device. 5,007,868, Cl. 440-071.000.
Fu, Jaw K.; Merritt, Arch J., deceased (by Merritt, Helene, executrix); and Smith, John R., to Keystone Environmental Resources, Inc. Method for treating contaminated soil by biological degradation on a sloped surface. 5,007,771, Cl. 405-258.000.
Fuchs, Hans-Bernd: *See—*
Hellermann, Walter; Herrmann, Christoph; Fuchs, Hans-Bernd; Nordsiek, Karl-Heinz; and Wolpers, Jurgen, 5,008,343, Cl. 525-316.000.
Fuchs, Juergen: *See—*
Wilharm, Peter; Buhr, Gerhard; and Fuchs, Juergen, 5,008,362, Cl. 528-28.000.
Fuji Electric Co., Ltd.: *See—*
Ozaki, Seishiro; Asahi, Nobuo; and Ebisawa, Tsuneo, 5,008,504, Cl. 200-401.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Takahashi, Akira, 5,008,823, Cl. 364-424.030.
Fuji Photo Film Co.: *See—*
Ikegawa, Akihiko; Okazaki, Masaki; and Sugimoto, Tadao, 5,008,181, Cl. 430-572.000.
Tanaka, Mitsugu; and Kubodera, Seiiti, 5,008,232, Cl. 503-227.000.
Fuji Photo Film Co., Ltd.: *See—*
Goda, Kensuke; and Ohno, Shigeru, 5,008,177, Cl. 430-522.000.
Miida, Takashi; Ozaki, Nozomu; Baba, Shigenori; and Kousaka, Kunimitsu, 5,008,696, Cl. 354-408.000.
Nagai, Tetsuji; Torii, Katura; and Ohno, Yoshio, 5,008,842, Cl. 364-551.010.
Ryoke, Katsumi; Takahashi, Masatoshi; Hashimoto, Akihiro; and Hasumi, Kazuo, 5,008,147, Cl. 428-323.000.
Shigaki, Takao; and Shimazaki, Osamu, 5,008,742, Cl. 358-79.000.
Shimano, Masami; and Sano, Atuhiro, 5,007,739, Cl. 356-383.000.
Tajima, Kenji; Kushima, Hiroshi; and Yamada, Sadami, 5,008,694, Cl. 354-277.000.
Tokuda, Kanji, 5,008,701, Cl. 355-35.000.
Yaginuma, Nakatsugu; and Arai, Takaki, 5,008,078, Cl. 422-56.000.
Fuji Xerox: *See—*
Koshi, Yutaka, 5,008,951, Cl. 382-56.000.
Fuji Xerox Co., Ltd.: *See—*
Akasaki, Yutaka; Nukada, Katsumi; and Sato, Katsuhiro, 5,008,431, Cl. 558-402.000.
Karakida, Kenichi; Yagi, Shigeru; Fukuda, Yuzuru; Nishikawa, Masayuki; Roh, Te N.; Takahashi, Noriyoshi; Ono, Masato; Yokoi, Masaki; and Komori, Yumiko, 5,008,170, Cl. 430-65.000.
Tsukawaki, Tomohiro, 5,008,948, Cl. 382-13.000.
Fujii, Takayoshi: *See—*
Ikuzawa, Masanori; Oguchi, Yoshiharu; Matsunaga, Kenichi; Toyoda, Noriyuki; Furusho, Takao; Fujii, Takayoshi; and Yoshikumi, Chikao, 5,008,243, Cl. 514-8.000.
Fujimi Ceramic Co., Ltd.: *See—*
Hashimoto, Ryusuke; Iwata, Mitsuru; Sugihara, Junichi; and Iwase, Minoru, 5,008,053, Cl. 264-60.000.
Fujino, Takeshi: *See—*
Moriizumi, Koichi; and Fujino, Takeshi, 5,008,830, Cl. 364-490.000.
Fujino, Takuo: *See—*
Uno, Ken; Fujino, Takuo; and Nakamori, Hideki, 5,008,002, Cl. 204-192.310.
Fujioka, Yasushi: *See—*
Nakagawa, Katsumi; Ishihara, Shunichi; Kanai, Masahiro; Murakami, Tsutomu; Arao, Kozo; Fujioka, Yasushi; and Sakai, Akira, 5,008,726, Cl. 357-30.000.
Fujita, Shigeo: *See—*
Utsunomiya, Masayuki; Fujita, Shigeo; Nozawa, Toshiyuki; and Kamiyama, Morihiro, 5,008,401, Cl. 548-455.000.
Fujita, Tadao: *See—*
Takayama, Jun; Ninomiya, Takeshi; Fujita, Tadao; and Inaba, Yoshiaki, 5,008,668, Cl. 341-83.000.
Fujita, Yoshiaki; Kawai, Satoshi; and Takeguchi, Shunsuke, to Nippon Piston Ring Co., Ltd. Assembled cam shaft. 5,007,956, Cl. 75-238.000.
Fujitsu Limited: *See—*
Sasaki, Kazuya; Yoshizawa, Sakae; Inagaki, Shinya; and Takeda, Keiko, 5,007,698, Cl. 350-96.150.
Yamamura, Takeshi; Endo, Seiji; Kawauchi, Kazuyuki; and Korenaga, Hiroki, 5,008,728, Cl. 357-45.000.
Yazawa, Shigehiko; Ogawa, Toru; Moritomo, Haruo; Suya, Yoshiaki; and Nakayama, Mikio, 5,008,884, Cl. 370-110.100.
Fukiage, Takahiko, to Mitsubishi Denki Kabushiki Kaisha. Voltage generating circuit for semiconductor device. 5,008,609, Cl. 323-313.000.
Fukuda, Yuzuru: *See—*
Karakida, Kenichi; Yagi, Shigeru; Fukuda, Yuzuru; Nishikawa, Masayuki; Roh, Te N.; Takahashi, Noriyoshi; Ono, Masato; Yokoi, Masaki; and Komori, Yumiko, 5,008,170, Cl. 430-65.000.
Fukui, Yutaka: *See—*
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Kurosawa, Soichi; Iijima, Katsumi; Iizuka, Nobuyuki; Maeno, Yosimi; Takahashi, Shintaro; Watanabe, Yasuo; and Hiraga, Ryo, 5,008,072, Cl. 420-69.000.
Fukuyama, Ryooji: *See—*
Kawasaki, Yoshinao; Kawahara, Hironobu; Sato, Yoshiaki; Fukuyama, Ryooji; Nojiri, Kazuo; and Torii, Yoshimi, 5,007,981, Cl. 156-643.000.
Fulgoni, Jean C. Protective device for protecting earlier treated hair. 5,007,443, Cl. 132-270.000.
Fuller, Elizabeth L.: *See—*
Mason, Stanley I., Jr.; Fuller, Elizabeth L.; and Doty, Roy E., 5,007,651, Cl. 273-256.000.
Fulton, Inge G.: *See—*
Blouse, Jeffrey L.; Fulton, Inge G.; Lange, Russell C.; Meyerson, Bernard S.; Nummy, Karen A.; Revitz, Martin; and Rosenberg, Robert, 5,008,207, Cl. 437-31.000.
Fumagalli, Fulgenzio: *See—*
Bovisio, Cipriano; Foglieni, Carlo; Fumagalli, Fulgenzio; Morlotti, Norberto; and Palladini, Mario, 5,007,665, Cl. 285-334.000.
Funatsu, Ryuichi: *See—*
Tanaka, Tsutomu; Oshida, Yoshitada; Shiba, Masataka; Nakashima, Naoto; and Funatsu, Ryuichi, 5,008,702, Cl. 355-52.000.
Fuqua, Mike R.: *See—*
Fiebig, Carolyn A. B.; Fuqua, Mike R.; Gursahaney, Suresh K.; Margosian, Gregg M.; and Weiss, Mark H., 5,008,805, Cl. 364-184.000.
Furcht, Leo T.: *See—*
Tsilibary, Effie C.; and Furcht, Leo T., 5,007,925, Cl. 623-1.000.
Furuhama, Shoichi: *See—*
Kakegawa, Toshiaki; and Furuhama, Shoichi, 5,007,381, Cl. 123-1.00A.
Furukawa, Kenji: *See—*
Murata, Shizuo; Nakayama, Minoru; Furukawa, Kenji; and Kobayashi, Ryuji, 5,008,456, Cl. 564-322.000.
Furukawa, Nobuhiro; Inoue, Kenji; Nogami, Mitsuzo; Kameoka, Seiji; and Tadokoro, Motoo, to Sanyo Electric Co., Ltd. Hydrogen-absorbing alloy electrode. 5,008,164, Cl. 429-59.000.
Furusho, Takao: *See—*
Ikuzawa, Masanori; Oguchi, Yoshiharu; Matsunaga, Kenichi; Toyoda, Noriyuki; Furusho, Takao; Fujii, Takayoshi; and Yoshikumi, Chikao, 5,008,243, Cl. 514-8.000.
Futaba Denshi Kogyo Kabushiki Kaisha: *See—*
Yamamoto, Michio, 5,008,899, Cl. 375-1.000.
Futamura, Shoji: *See—*
Hattori, Isao; and Futamura, Shoji, 5,008,509, Cl. 219-69.150.
Gabas, Carlos, to Industrias Techno-Matic, S.A. Automobile sun visor hinge spring. 5,007,622, Cl. 267-158.000.
Gabel, Christian: *See—*
Schleppinghoff, Bernhard; Kohler, Hans-Dieter; Gabel, Christian; and Scheef, Hans-Volker, 5,008,466, Cl. 568-697.000.
Gabelmann, Jeffrey M.: *See—*
Branstetter, Ronald L.; Jaeb, Jonathan P.; and Gabelmann, Jeffrey M., 5,007,423, Cl. 128-633.000.
GAF Chemicals Corporation: *See—*
Chaudhuri, Ratan K.; Tracy, David J.; and Login, Robert B., 5,008,104, Cl. 424-70.000.
Dandreaux, Gary; Login, Robert B.; Merianos, John J.; Garelick, Paul; Plochocka, Krystyna; Negrin, Max; and Shih, Jenn S., 5,008,367, Cl. 528-326.000.
Merianos, John J.; and Login, Robert B., 5,008,038, Cl. 252-363.500.
Merianos, John J., 5,008,093, Cl. 423-272.000.
Merianos, John J.; Lieberman, Herbert A.; and Login, Robert B., 5,008,106, Cl. 424-80.000.
Tazi, Mohammed; and Plochocka, Krystyna, 5,008,355, Cl. 526-271.000.
Gagliardo, Michael A.: *See—*
Chinnaswamy, Kumar; Gagliardo, Michael A.; Goodwin, Paul M.; Lynch, John J.; and Tessari, James E., 5,008,886, Cl. 371-40.200.
Gagnon, Daniel F.: *See—*
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Gaida, Wolfram: *See—*
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; Hoefke, Wolfgang; Arndts, Dietrich; and Streller, Ilse, 5,008,273, Cl. 514-301.000.

GalenPharma, Inc.: *See—*
Bernstein, Joel E., 5,008,289, Cl. 514-535.000.

Galfe, Gunther: *See—*
Hermsdorffer, Joachim; Galfe, Gunther; Lautenbacher, Stefan; Korte, Reinhard; Krause, Hans-Joachim; Krull, Frans; May, Arno; Oberdorfer, Dietmar; and Pluquett, Ulrich, 5,007,433, Cl. 128-742.000.

Gallagher, John N., to Amoco Corporation. Geophysical exploration by automatically picking and associating stacked seismic sections with regional coherency peaks of velocity spectra. 5,008,861, Cl. 367-59.000.

Gallagher, Thomas E., IV: *See—*
Watson, Dean R.; and Gallagher, Thomas E., IV, 5,007,639, Cl. 273-60.00R.

Gannaway, Edwin L., to Tecumseh Products Company. Hermetic compressor having resilient internal mounting. 5,007,807, Cl. 417-363.000.

Garber, John E.: *See—*
Marion, DeLos E., deceased, 5,007,415, Cl. 128-80.00C.

Gardner, Tommy R.; Dill, Walter R.; Ford, William G. F.; and King, Karen L., to Halliburton Company. Well treatment compositions and method. 5,008,026, Cl. 252-8.553.

Gardner, Willis W.: *See—*
Ball, James H.; and Gardner, Willis W., 5,007,745, Cl. 384-307.000.

Garelick, Paul: *See—*
Dandreaux, Gary; Login, Robert B.; Merianos, John J.; Garelick, Paul; Plochocka, Krystyna; Negrin, Max; and Shih, Jenn S., 5,008,367, Cl. 528-326.000.

Garfield, Theodore F. Anchor for rotary sanding drum. 5,007,208, Cl. 51-281.00R.

Garrity, George M.: *See—*
Chaiet, Louis; Zimmerman, Sheldon B.; Monaghan, Richard L.; and Garrity, George M., 5,008,187, Cl. 435-72.000.

Garthwaite, John H.: *See—*
Robinson, Scott T.; Denning, William K.; Redfield, John M.; and Garthwaite, John H., 5,007,860, Cl. 439-540.000.

Garwood, William E.; Le, Quang N.; Shim, Joosup; and Wong, Stephen S., to Mobil Oil Corp. Synthetic lubricants. 5,008,460, Cl. 585-11.000.

Gaskell, Martin. Operations processor. 5,007,840, Cl. 434-206.000.

Gasser, Oswald; Guggenberger, Rainer; and Ellrich, Klaus, to ESPE Stiftung & Co. Produktions- und Vertriebs KG. Molding composition for making casting patterns. 5,008,303, Cl. 522-64.000.

Gaston, Didier, to Schlumberger Technology Corporation. Safe packaging for detonating cord. 5,007,230, Cl. 53-397.000.

Gat, Nahum. Personal UV radiometer. 5,008,548, Cl. 250-372.000.

Gaul, Holger: *See—*
Urbach, Hansjorg; Henning, Rainer; Teetz, Volker; Geiger, Rolf; Becker, Reinhard; and Gaul, Holger, 5,008,400, Cl. 548-452.000.

Gawrys, George W.; Oberman, Richard A.; and Willcock, William T., to AT&T Bell Laboratories. Customer definable integrated voice/-data call transfer technique. 5,008,930, Cl. 379-210.000.

Gaylord, Thomas K.; Glytsis, Elias N.; Moharam, M. Gamal; and Baird, William E., to Georgia Tech Research Corporation. Technique for producing antireflection grating surfaces on dielectrics, semiconductors and metals. 5,007,708, Cl. 350-162.200.

Gayso, Donald W. Groove lock dental bridge attachment and method. 5,007,836, Cl. 433-181.000.

Gebert, Franz J.; Theron, Johannes P.; Gebert, Ralf D. H.; and Gebert, Rudiger H. Traffic measurement equipment. 5,008,666, Cl. 340-936.000.

Gebert, Ralf D. H.: *See—*
Gebert, Franz J.; Theron, Johannes P.; Gebert, Ralf D. H.; and Gebert, Rudiger H., 5,008,666, Cl. 340-936.000.

Gebert, Rudiger H.: *See—*
Gebert, Franz J.; Theron, Johannes P.; Gebert, Ralf D. H.; and Gebert, Rudiger H., 5,008,666, Cl. 340-936.000.

Gebhardt, Tstvan: *See—*
Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponacz, Anna; Eifert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo ; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.

Geddes, Leslie A.: *See—*
Badylak, Stephen F.; Geddes, Leslie A.; and Wessale, Jerry L., 5,007,927, Cl. 623-3.000.

Geiger, Rolf: *See—*
Urbach, Hansjorg; Henning, Rainer; Teetz, Volker; Geiger, Rolf; Becker, Reinhard; and Gaul, Holger, 5,008,400, Cl. 548-452.000.

Geist, Jon C.: *See—*
Jach, Terrence J.; Geist, Jon C.; Carver, Gary P.; and Novotny, Donald B., 5,008,908, Cl. 378-70.000.

Genentech, Inc.: *See—*
Anderson, Stephen; Light, David R.; Marks, Cara; and Rastetter, William H., 5,008,193, Cl. 435-138.000.

General Dynamics Corporation, Convair Division: *See—*
Jensen, Jack E.; and Parekh, Ebrahim, 5,007,781, Cl. 411-337.000.

General Electric CGR S.A.: *See—*
Le Guen, Jacques, 5,008,916, Cl. 378-118.000.
Le Roux, Patrick, 5,007,426, Cl. 128-653.0AF.

General Electric Co.: *See—*
Allen, Richard B.; Gibbs, William E.; and Hans, Lynn M., 5,008,298, Cl. 521-139.000.
Barancik, Martin B.; and Teutsch, Erich O., 5,007,818, Cl. 425-144.000.
Farrall, George A.; and Hansen, Steven D., 5,008,912, Cl. 378-91.000.
Hurtgen, Jerome P., 5,007,156, Cl. 29-596.000.
Ketcham, Stephen O.; Ortiz, Paul W.; Jarvis, Jamie S.; and McCray, Clyde S., 5,007,316, Cl. 83-167.000.
Lee, David S.; and Tiearney, Thomas C., Jr., 5,008,918, Cl. 378-144.000.
Lee, Gim F., Jr., 5,008,314, Cl. 524-143.000.
Nelson, Linda H., 5,008,315, Cl. 524-180.000.
Raleigh, William J.; Thimineur, Raymond J.; and Zotto, Anthony A., 5,008,103, Cl. 424-66.000.
Rose, James W.; and Sitnik, Theresa A., 5,008,049, Cl. 264-4.000.
Yates, John B., III; and Lee, Gim F., Jr., 5,008,333, Cl. 525-92.000.
Yee, Edgar; and Bernier, Richard E., 5,008,499, Cl. 200-50.00C.

General Instrument Corporation: *See—*
Edmond, John A.; Waltz, Douglas G.; Mitchell, Muni M.; Sedigh, Mohammad; and Hamerski, Roman, 5,008,735, Cl. 357-74.000.

General Signal Corporation: *See—*
Barker, James E.; and Cash, Timothy J., 5,007,613, Cl. 251-58.000.
Sindledecker, Glenn L., 5,008,705, Cl. 355-43.000.

General Tire, Inc.: *See—*
Alexander, Joseph H.; Radcliffe, Stanley L.; Robertson, Martin N.; Bator, Eugene A.; and Anderson, John E., 5,007,315, Cl. 83-72.000.

Genlyte, Inc.: *See—*
Fabbri, William C., 5,008,790, Cl. 362-220.000.

Genmark Automation: *See—*
Genov, Genco; and Cameron, James, 5,007,784, Cl. 414-225.000.

Genov, Genco; and Cameron, James, to Genmark Automation. Dual end effector robotic arm. 5,007,784, Cl. 414-225.000.

Gentes, James J., to Giro Sport Design. Strap retainer for head gear. 5,007,141, Cl. 24-163.00R.

Gentilini, Leonardo: *See—*
Calanchi, Massimo; Gentilini, Leonardo; and Marconi, Marco, 5,008,117, Cl. 424-494.000.

Georgia Tech Research Corporation: *See—*
Gaylord, Thomas K.; Glytsis, Elias N.; Moharam, M. Gamal; and Baird, William E., 5,007,708, Cl. 350-162.200.

Georgiou, John; Gueth, Thomas F.; and Ramsey, James S. Method and apparatus for reading a bar code on a moving sheet. 5,008,520, Cl. 235-462.000.

Gerdau, Thomas; Kleiner, Hans-Jerg; Peuckert, Marcellus; Bruck, Martin; and Aldinger, Fritz, to Hoechst Aktiengesellschaft. Polymeric hydridochlorosilazanes and processes for their preparation. 5,008,423, Cl. 556-412.000.

Germann, Albrecht J., to De La Rue Giori S.A. Convertible multicolor printing machine, especially for the printing of banknotes. 5,007,339, Cl. 101-177.000.

Gersdorf, Joachim: *See—*
Kleiner, Hans-Jerg; Gersdorf, Joachim; and Bastian, Udo, 5,008,426, Cl. 558-82.000.

Geurts, Herman J. J. M.: *See—*
Erkens, Leonardus J. H.; Algra, Gerben P.; Geurts, Herman J. J. M.; and Gielkens, Hubertus P. A., 5,007,963, Cl. 106-433.000.

GEZE Sport International GmbH: *See—*
Bogner, Martin; Harsanyi, Otto; and Peyre, Henri, 5,007,657, Cl. 280-626.000.

Ghezzi, Markus: *See—*
Martinelli, Bruno; Ghezzi, Markus; and Streicher, Gunter, 5,007,941, Cl. 8-436.000.

Ghisler, Walter: *See—*
Dahlin, Steinar J. E. A.; and Ghisler, Walter, 5,008,953, Cl. 455-33.000.

Ghosh, Amit K.: *See—*
Mahoney, Murray W.; and Ghosh, Amit K., 5,007,265, Cl. 72-37.000.

Ghyselinck, Philippe: *See—*
Delcommune, Luc; and Ghyselinck, Philippe, 5,007,939, Cl. 623-66.000.

Giannetti, John; Sleve, Jerry F.; and Shea, Robert H., to Eastman Kodak Company. Scuff sheet separating device. 5,007,627, Cl. 271-35.000.

Giardina, Aldo: *See—*
Fernando, Gerard M. X.; and Giardina, Aldo, 5,008,744, Cl. 358-105.000.

Gibbs, William E.: *See—*
Allen, Richard B.; Gibbs, William E.; and Hans, Lynn M., 5,008,298, Cl. 521-139.000.

Gielkens, Hubertus P. A.: *See—*
Erkens, Leonardus J. H.; Algra, Gerben P.; Geurts, Herman J. J. M.; and Gielkens, Hubertus P. A., 5,007,963, Cl. 106-433.000.

Giesecke, Lee H.: *See—*
DiVito, Anthony M.; and Giesecke, Lee H., 5,007,803, Cl. 417-137.000.

Gilbert, Charles A. Focus vision visor. 5,007,110, Cl. 2-10.000.

Gilby, Anthony C.: *See—*
Jeannotte, Anthony C.; and Gilby, Anthony C., 5,007,740, Cl. 356-436.000.

Gill, Manzur; Lin, Sung-Wei; Cleavelin, C. Rinn; and McElroy, David J., to Texas Instruments Incorporated. Electrically-erasable, electrically-programmable read-only memory cell with self-aligned tunnel. 5,008,721, Cl. 357-23.500.

Gillette Company, The: *See—*
Thompson, Harold R., 5,007,755, Cl. 401-175.000.

Giordano, Paul J.; and Smierciak, Richard C., to Standard Oil Company, The. Epoxy fluorocarbon coating compositions and the process to make the same. 5,008,135, Cl. 427-386.000.

Gipson, John M.: *See—*
Effland, John E.; Gipson, John M.; Shaffer, David B.; and Webber, John C., 5,008,679, Cl. 342-353.000.

Girault, Eric; and Arnulf, Paul, to Salomon S.A. Cross-country ski binding with automatic closure. 5,007,656, Cl. 280-615.000.

Giro Sport Design: *See—*
Gentes, James J., 5,007,141, Cl. 24-163.00R.

Giroux, Patrick C. P. Safety stabilizer for auger. 5,007,492, Cl. 175-170.000.

GKN Automotive, Inc.: *See—*
Hazebrook, Daniel W., 5,007,881, Cl. 464-171.000.

GKSS Forschungszentrum Geesthacht GmbH: *See—*
Pinnau, Ingo; and Wind, Jan, 5,007,944, Cl. 55-16.000.

Glaeser, Linda C.: *See—*
Brazdil, James F., Jr.; Toft, Mark A.; and Glaeser, Linda C., 5,008,427, Cl. 558-319.000.

Glasson, Nigel P.: *See—*
Brown, Alan J.; James, Roger; and Glasson, Nigel P., 5,008,220, Cl. 501-81.000.

Glaxo Group Limited: *See—*
Clitherow, John W., 5,008,256, Cl. 514-184.000.
Coates, Ian H.; Oxford, Alexander W.; and North, Peter C., 5,008,272, Cl. 514-292.000.

Glenn, William H.: *See—*
Morey, William W.; Leonberger, Fred J.; Glenn, William H.; and Meltz, Gerald, 5,007,705, Cl. 350-96.290.

Glennon, Timothy F., to Sundstrand Corporation. VSCF power conversion system using an output autotransformer. 5,008,801, Cl. 363-132.000.

Global Pumps, Inc.: *See—*
DiVito, Anthony M.; and Giesecke, Lee H., 5,007,803, Cl. 417-137.000.

Glover, Michael; and Reichert, Gerhard, to Lauren Manufacturing Company. Multiple pane sealed glazing unit. 5,007,217, Cl. 52-172.000.

Glunz Aktiengesellschaft: *See—*
Risius, Harald; and Oldemeyer, Wilhelm, 5,008,057, Cl. 264-134.000.

Gluss, David H.: *See—*
Eltoukhy, Abelshafy A.; and Gluss, David H., 5,008,855, Cl. 365-96.000.

Glytsis, Elias N.: *See—*
Gaylord, Thomas K.; Glytsis, Elias N.; Moharam, M. Gamal; and Baird, William E., 5,007,708, Cl. 350-162.200.

Goade, James C.; and Werner, Claude H., to Caterpillar Inc. Reversible variable displacement hydraulic device. 5,007,805, Cl. 417-216.000.

Goda, Kensuke; and Ohno, Shigeru, to Fuji Photo Film Co., Ltd. Silver halide photographic materials. 5,008,177, Cl. 430-522.000.

Godber, John: *See—*
Ozin, Geoffrey A.; Huber, Helmut X.; Prokopowicz, Richard A.; and Godber, John, 5,008,234, Cl. 502-326.000.

Godfrey, Christopher R. A.: *See—*
Clough, John M.; Godfrey, Christopher R. A.; Heaney, Stephen P.; and Anderton, Kenneth, 5,008,276, Cl. 514-335.000.

Goguelin, Michel, to Exxon Chemical Patents Inc. Reinforced thermoplastics sheet and its manufacturing process. 5,008,306, Cl. 523-220.000.

Goins, Jeffrey L.: *See—*
Bluthardt, Edward A.; and Goins, Jeffrey L., 5,007,644, Cl. 273-178.00B.

Golden Valley Microwave Foods Inc.: *See—*
Watkins, James D., 5,008,024, Cl. 219-10.55E.

Goldstein, Michael D. Electric nail polish remover. 5,007,441, Cl. 132-73.600.

Gomikawa, Takao, to Kabushiki Kaisha Toshiba. Television receiver with teletext receiving function and method of superimposing teletext picture on television picture. 5,008,750, Cl. 358-147.000.

Gonnelli, Robert R.: *See—*
Gordon, Gary B.; and Gonnelli, Robert R., 5,008,804, Cl. 364-167.010.

Gooch, William A., Jr.; Burkins, Matthew S.; Mills, Leo F.; Ogilvy, James W.; and Ricchiazzi, Antonio J., to United States of America, Army. Cast single plate P900 armor. 5,007,326, Cl. 89-36.020.

Goodley, George R.; Harman, Phillip R.; and Prather, Charles W., to Du Pont de Nemours, E. I., and Company. Fishing lure with improved elastomeric skirt. 5,007,193, Cl. 43-42.280.

Goodnow, Ronald F.: *See—*
Reid, Robert A.; and Goodnow, Ronald F., 5,007,132, Cl. 15-256.530.

Goodwin, John D.; Goodwin, Samuel D.; House, Wilford; and Farrar, James. Sports training apparatus. 5,008,839, Cl. 364-550.000.

Goodwin, Paul M.: *See—*
Chinnaswamy, Kumar; Gagliardo, Michael A.; Goodwin, Paul M.; Lynch, John J.; and Tessari, James E., 5,008,886, Cl. 371-40.200.

Goodwin, Samuel D.: *See—*
Goodwin, John D.; Goodwin, Samuel D.; House, Wilford; and Farrar, James, 5,008,839, Cl. 364-550.000.

Goodyear Tire & Rubber Company, The: *See—*
Maathuis, Antonnis G.; Spielmann, Jurgen; Beer, Klaus; and Oare, Thomas R., 5,007,974, Cl. 156-117.000.

Goran, James L., to Ford Motor Company. Standoff retainer. 5,007,779, Cl. 411-48.000.

Gorbatenko, George G. Memory spaced array. 5,008,819, Cl. 364-200.000.

Gordon, Gary B.; and Gonnelli, Robert R., to Total Spectrum Manufacturing Inc. Robotic television-camera dolly system. 5,008,804, Cl. 364-167.010.

Gordon S.n.C. di Bizzarri Paolo e C.: *See—*
Paolo, Bizzarri, 5,007,127, Cl. 15-29.000.

Gorner, Wilmut: *See—*
Liedtke, Heinz; Ploeger, Cornelius; and Gorner, Wilmut, 5,008,792, Cl. 362-374.000.

Gornowicz, Gerald A.: *See—*
Lee, Chi-Long; and Gornowicz, Gerald A., 5,008,115, Cl. 424-486.000.

Goronkin, Herbert; and Kane, Robert C., to Motorola, Inc. Non-planar field emission device having an emitter formed with a substantially normal vapor deposition process. 5,007,873, Cl. 445-49.000.

Gorris, Joannes J. H. M., to Sulzer Brothers Limited. Electromagnetic weft brake. 5,007,464, Cl. 139-455.000.

Gose, William C.: *See—*
Hyche, Kenneth W.; and Gose, William C., 5,007,961, Cl. 106-18.000.

Gotchy, David: *See—*
Marshall, James W.; Gotchy, David; Uffelman, Bradley L.; Leimbach, Wendell B.; and Wilhelmi, Albert A., 5,008,572, Cl. 310-45.000.

Goto, Toshio: *See—*
Kume, Toyohiko; Goto, Toshio; Kamochi, Atsumi; Yanagi, Akihiko; Miyauchi, Hiroshi; and Asami, Tadao, 5,007,952, Cl. 71-73.000.

Gotoh, Hiroshi; Kusakata, Shigeru; and Shiojima, Isao, to Ricoh Company, Ltd. Leuco dyes and recording material employing the same. 5,008,238, Cl. 503-217.000.

Gotou, Tomohisa: *See—*
Mimura, Yoshikazu; Takano, Keiichi, deceased; and Gotou, Tomohisa, 5,008,173, Cl. 430-78.000.

Gottschald, Lutz, to Wernicke & Co. GmbH. Method and apparatus for applying a strip to the planar contour-prepared edge of a rotating lens. 5,007,977, Cl. 156-353.000.

Goubeaux, Donald E., to Monarch Marking Systems, Inc. Replaceable inking cartridge with depletion counter. 5,007,750, Cl. 400-249.000.

Goudey, James S.: *See—*
Bassi, Pawan K.; Eastwell, Kenneth C.; Goudey, James S.; and Spencer, Mary E., 5,008,091, Cl. 423-245.100.

Goutiere, Alain, to AMP Incorporated. Electrical interconnection assembly. 5,007,888, Cl. 439-189.000.

Goyette, Ronald A.: *See—*
Wolfe, Robert E.; and Goyette, Ronald A., 5,007,254, Cl. 68-17.00R.

Grabbe, Dimitry G., to AMP Incorporated. Low height chip carrier socket. 5,007,845, Cl. 439-73.000.

Gracie, Phillip: *See—*
Abraham, Joseph; Hamonet, Michael; Gracie, Phillip; and Hood, Warwick J., 5,007,360, Cl. 114-90.000.

Gralak, Ronald P., to Liebel-Flarsheim Company. X-ray film cassette with flexible grid bonded to prestressed cover. 5,008,920, Cl. 378-185.000.

Granskog, Roland, to ALIMAK AB. Method and equipment for narrow ore mining. 5,007,683, Cl. 299-10.000.

Grant, Ralph M. Interferometric test standard. 5,007,738, Cl. 356-347.000.

Graute, Horst, to Hergeth Hollingsworth GmbH. Carding apparatus. 5,007,137, Cl. 19-296.000.

Grava, Arturs: *See—*
Jolley, Scott T.; and Grava, Arturs, 5,008,028, Cl. 252-68.000.

Gray, Dennis J.; and Elmstrom, Gary W., to University of Florida. Process for the accelerated production of triploid seeds for seedless watermelon cultivars. 5,007,198, Cl. 47-58.000.

Gray, Thomas W.: *See—*
DeCecca, Michael L.; Kowalczyk, Michael S.; Gray, Thomas W.; and Partridge, Paul W., 5,008,538, Cl. 250-324.000.

Grayston, J. Thomas; Kuo, Cho-chou; and Wang, San-pin, to University of Washington, The Board of Regents of the. Detection of unique chlamydia strain associated with acute respiratory disease. 5,008,186, Cl. 435-7.360.

Great Lakes Chemical Corporation: *See—*
Favstritsky, Nicolai A.; and Nulph, Robert J., 5,008,323, Cl. 524-469.000.

Greco, Carl C.; and Triplett, Kelly B., to Akzo N.V. Novel spinel precursors. 5,008,420, Cl. 556-182.000.

Green, Samuel I., to McDonnell Douglas Corporation. Photodetector output coupling with low and high frequency outputs. 5,008,526, Cl. 250-214.00R.

Greene, David C.: *See—*
Phillips, Larry G.; Meyer, Edwin R.; and Greene, David C., 5,008,740, Cl. 358-23.000.

Greene, George R.: *See—*
Rosenbluth, Robert F.; Lenker, Jay A.; and Greene, George R., 5,007,898, Cl. 604-54.000.

Greene, Sidney R., to Hughes Aircraft Company. Modular missile upgrade apparatus. 5,007,347, Cl. 102-473.000.

Greenfield, Mark S., to Kennametal Inc. Mn-B steel alloy composition. 5,008,073, Cl. 420-121.000.

Gregory, Reginald: *See—*
Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., 5,008,465, Cl. 568-697.000.

Greiner, Mark E.: *See*—
Davis, Rex M.; and Greiner, Mark E., 5,008,523, Cl. 250-214.00A.

Greiner, Peter; and Pfluger, Hubert, to Greiner, Peter. Dry run-high pressure stage of a multistage piston compressor. 5,007,331, Cl. 92-165.00R.

Griffin, Barry A.: *See*—
Loverich, Gary F.; and Griffin, Barry A., 5,007,376, Cl. 119-3.000.

Griffith, George L.: *See*—
Weete, John D.; and Griffith, George L., 5,008,037, Cl. 252-314.000.

Griffith Laboratories Worldwide, Inc.: *See*—
Bernacchi, Donald B.; Loewe, Robert J.; and Immel, Donna L., 5,008,121, Cl. 426-89.000.

Griffith, Robert: *See*—
Cox, Laurence C.; Dugan, Raymond; Evans, Daniel D.; Griffith, Robert; Handley, Terry L.; and Leeper, Jeffrey J., 5,007,318, Cl. 83-425.200.

Grohn, Michael; Murwald, Mario; Thoma, Frank; and Hoffmann, Karlheinz, to Daimler-Benz AG. Magnetic valve controlled injection device. 5,007,401, Cl. 123-509.000.

Grollier, Jean F.; and Dubief, Claude, to L'Oreal. Composition and process for treating keratinic substances with at least one anionic polymer and at least one quaternized protein. 5,008,105, Cl. 424-70.000.

Gross, Rainer: *See*—
Franckowiak, Gerhard; Stoltefuss, Jurgen; Bechem, Martin; Gross, Rainer; Kayser, Michael; Hebisch, Siegbert; and Schramm, Matthias, 5,008,279, Cl. 514-354.000.

Groswith, Charles T., III; Phipps, Richard D.; Lathrop, Robert L., Jr.; Stewart, John F.; and Kaufmann, Rick J., to Taurus Tetraconcepts, Inc. Combined paper punch and binding apparatus. 5,007,782, Cl. 412-40.000.

Grove, Lee A., to Remote Controls, Inc. Temperature actuated flow control device. 5,007,446, Cl. 137-72.000.

Grover, Gary J.; and Bergey, James L., to E. R. Squibb & Sons, Inc. Method of reducing pre- and post-ischemic myocardial arrhythmias and fibrillation. 5,008,284, Cl. 514-423.000.

Gruber, Harry E., to University of California, The Regents of the. Method of treating autism. 5,008,251, Cl. 514-43.000.

Gruia, Adrian J., to UOP. Process for refractory compound conversion in a hydrocracker recycle liquid. 5,007,998, Cl. 208-59.000.

Grumman Aerospace Corporation: *See*—
Brandstetter, Robert W.; Pernick, Benjamin J.; Fonneland, Nils J.; and Caputi, Stephen J., 5,008,851, Cl. 364-807.000.

Grunberger, Dezider: *See*—
Nakanishi, Koji; Oltz, Eugene M.; and Grunberger, Dezider, 5,008,441, Cl. 560-75.000.

Grunzinger, Raymond E.: *See*—
Wilson, Bruce B.; and Grunzinger, Raymond E., 5,008,142, Cl. 428-203.000.

Grzywna, Stanley E.: *See*—
Lackner, John R.; Grzywna, Stanley E.; Weber, Ralph A.; and Baird, Thomas E., 5,007,133, Cl. 15-351.000.

GTE Products Corporation: *See*—
Jackson, Douglas M.; and Arbie, John A., Sr., 5,007,181, Cl. 34-57.00R.
Penkunas, Joseph J.; and Smith, Theodore E., Jr., 5,007,957, Cl. 75-252.000.
Spencer, James R.; and Mullendore, James A., 5,008,071, Cl. 419-28.000.

Gueremy, Claude; Jimonet, Patrick; and Mignani, Serge, to Rhone-Poulenc Sante. 2-iminobenzothiazoline derivatives, their preparation and pharmaceutical compositions containing them. 5,008,280, Cl. 514-367.000.

Guerra, Robert; and Soni, Pravin, to Raychem Corporation. Curable adhesives. 5,008,340, Cl. 525-193.000.

Gueth, Thomas F.: *See*—
Georgiou, John; Gueth, Thomas F.; and Ramsey, James S., 5,008,520, Cl. 235-462.000.

Guggenberger, Rainer: *See*—
Gasser, Oswald; Guggenberger, Rainer; and Ellrich, Klaus, 5,008,303, Cl. 522-64.000.

Guichard, Jacques; Buchner, Georges; and Labat, Jacques, to Etat Francais. Telecommunications terminal with improved control functions. 5,008,924, Cl. 379-53.000.

Guida, Wayne C.: *See*—
Secrist, John A., III; Montgomery, John A.; Ealick, Steve E.; Erion, Mark D.; and Guida, Wayne C., 5,008,265, Cl. 514-258.000.
Secrist, John A., III; Montgomery, John A.; Ealick, Steve E.; Erion, Mark D.; and Guida, Wayne C., 5,008,270, Cl. 514-258.000.

Guillon, Henri, to Hutchinson. Sealing slideway for a moving sheet, and in particular for a motor vehicle window. 5,007,202, Cl. 49-441.000.

Gulick, James D., to Sports Glow, Inc. Golf ball and method of making same. 5,007,647, Cl. 273-213.000.

Gunn, Charles L.; Davis, Harold; Spahni, Milton D., Jr.; and Wanless, Ronald H., to Procter & Gamble Company, The. Carton for granular materials. 5,007,541, Cl. 206-611.000.

Gunther, Bernd-Rainer; Losch, Rainer; and Steiner, Klaus, to A. Nattermann & Cie, GmbH. Process for producing ebselen in highly pure form. 5,008,394, Cl. 548-121.000.

Gursahaney, Suresh K.: *See*—
Fiebig, Carolyn A. B.; Fuqua, Mike R.; Gursahaney, Suresh K.; Margosian, Gregg M.; and Weiss, Mark H., 5,008,805, Cl. 364-184.000.

Gusching, Nagle V., to Monarch Machine Tool Company, The. Machine tool turret. 5,007,151, Cl. 29-33.00J.

Gustafsson, Par; Sobel, Jarl; and Ornholmer, Lars, to Asea Brown Boveri AB. Magnetoelastic force transducer. 5,007,295, Cl. 73-862.690.

Gustavsson, Tord G.; Lyxell, Frans O. S.; and Silja, Karl T. I., to Valmet Paper Machinery, Inc. Creping doctor with two suction chambers in the support beam. 5,007,986, Cl. 162-281.000.

Gutsche, Bernhard: *See*—
Bremus, Norbert; Gutsche, Bernhard; Jeromin, Lutz; Peukert, Eberhard; and Schleper, Bernard, 5,008,046, Cl. 260-410.600.

Guy, Yoram, to Monroe Auto Equipment Company. Internal damping force sensor. 5,007,659, Cl. 280-707.000.

H. R. Black Company: *See*—
Anderson, Raymond L., 5,008,007, Cl. 210-111.000.

Haab, William G.: *See*—
Shaffer, Blaine P.; and Haab, William G., 5,008,865, Cl. 368-10.000.

Haack, Johannes, to Feintool International Holding. Method and apparatus for the bending of workpieces. 5,007,264, Cl. 72-10.000.

Haag, Werner O.; and Lago, Rudolph M., to Mobil Oil Corp. Direct production of styrenes by reaction of aromatics with aldehydes. 5,008,482, Cl. 585-437.000.

Habbab, Isam M. I.: *See*—
Cimini, Leonard J., Jr.; and Habbab, Isam M. I., 5,008,958, Cl. 455-619.000.

Haberstock, Rolf. Die device. 5,007,278, Cl. 72-383.000.

Hacault, Michel G. P.; Heurtel, Bertrand J. J. M.; and Serre, Jacques R., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.". Rotor blade fixing for turbomachine rotors. 5,007,800, Cl. 416-220.00R.

Hadewe B.V.: *See*—
van der Werff, Adriaan, 5,007,507, Cl. 188-77.00W.

Hafla, Dietmar F.; and Sommer, Guenther, to Index-Werke Komm. -Ges. Hahn & Tessky. Lathe. 5,007,314, Cl. 82-120.000.

Hagihara, Takeaki; and Aoki, Satoshi, to Asahi Medical Co., Ltd. Compact plasma separator and an apparatus containing the same. 5,008,012, Cl. 210-321.800.

Hagiwara, Kiyokazu: *See*—
Iida, Masanori; Hagiwara, Kiyokazu; Asakura, Hiroyuki; Nishioka, Minoru; and Murase, Koichi, 5,007,709, Cl. 350-162.220.

Hain, Johann: *See*—
Bierbaum, Thomas; and Hain, Johann, 5,007,831, Cl. 433-114.000.

Hainey, Melvin F. Golfer's cleaning tool. 5,007,129, Cl. 15-236.080.

Hajos, Gyorgy: *See*—
Schon, Istvan; Nyeki, Olga; Kisfaludy, Lajos, deceased; Denes, Laszlo; Hajos, Gyorgy; and Szporny, Laszlo, 5,008,246, Cl. 514-18.000.

Hale, Peter G.; and Russell, John N., to STC plc. Method of making optical fibre cables. 5,007,703, Cl. 350-96.230.

Hall, Robert E.; Spolek, Graig A.; Wasser, John H.; and Butts, Nelson L., to United States of America, U.S. Environmental Protection Agency. Woodstove for heated air forced into a secondary combustion chamber and method of operating same. 5,007,404, Cl. 126-77.000.

Hallbach, Raymond L., to Cincinnati Milacron Inc. Lubrication apparatus and method. 5,007,504, Cl. 184-8.000.

Halliburton Company: *See*—
Gardner, Tommy R.; Dill, Walter R.; Ford, William G. F.; and King, Karen L., 5,008,026, Cl. 252-8.553.

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Meseke, Curt T.; Winkler, Winfried; and Hilbig, Renate, 5,007,535, Cl. 206-366.000.

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Day, Roger W.; and Hani, Rahim, 5,008,443, Cl. 560-169.000.

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Schulte, Burkart; Sterner, Hakan; Wetzka, Gerhard; and Hardt, Norbert, 5,007,213, Cl. 52-29.000.

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Bogner, Martin; Harsanyi, Otto; and Peyre, Henri, 5,007,657, Cl. 280-626.000.

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Herbet, Albert J.; Hart, Ronald L.; and Work, Dale E., 5,008,133, Cl. 427-333.000.

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Muramatsu, Sadao; Hashiba, Yukifumi; and Ikeda, Yuuichi, 5,008,698, Cl. 354-429.000.

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Matsumoto, Shusaku; Hatakawa, Yoshio; and Nakajima, Akihiko, 5,008,387, Cl. 536-119.000.

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Nickel, Dwight E.; O'Halloran, Michael L.; and Case, Cecil L., 5,007,235, Cl. 56-12.400.

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Erickson, Phillip J.; Crossman, Janet L.; Heacock, Gregory L.; and Mainster, Martin A., 5,007,729, Cl. 351-219.000.

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Cheng, Yung-chi; and Bobek, Miroslav, 5,008,252, Cl. 514-50.000.

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Longman, Robert J.; Helfet, Peter R.; and Abrams, Michael J., 5,008,687, Cl. 346-135.100.

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Bremus, Norbert; Gutsche, Bernhard; Jeromin, Lutz; Peukert, Eberhard; and Schleper, Bernard, 5,008,046, Cl. 260-410.600.
Schulz, Paul; and Schwadtke, Karl, 5,008,031, Cl. 252-168.000.

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Horn, Marcus J., 5,008,205, Cl. 436-89.000.
Mangelsdorf, Steven T.; and James, David V., 5,008,904, Cl. 375-107.000.
Mason, Scott C.; and Slutz, Robert A., 5,007,844, Cl. 439-68.000.
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Hideharu, Nagahama, to Yoko Co., Ltd. Belt conveyor supporting arrangement. 5,007,528, Cl. 198-823.000.

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Weder, Donald E.; Straeter, William F.; Straeter, Joseph G.; Craig, Franklin J.; Donnelly, Wilma M.; and Redditt, Jack W., 5,007,229, Cl. 53-397.000.

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Ozawa, Makoto; Hirama, Yasuo; and Mizuno, Shyuzi, 5,007,677, Cl. 297-284.000.
Hirano, Masaki: *See*—
Kobayashi, Hitoshi; Takano, Akira; Narusawa, Naoharu; Tsukada, Yukihiko; Sakamoto, Hiroshi; Hirano, Masaki; and Ando, Masao, 5,008,710, Cl. 355-202.000.
Hiratsuka, Katsuo; Odaka, Yoshiyuki; and Yoshida, Takeshi, to SSMC Inc. Cutter actuator of a button perforating sewing machine. 5,007,356, Cl. 112-68.000.
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Kitaura, Hiromu; Isobe, Mitsuo; Kawahara, Isao; Hirauchi, Yoshio; Ninomiya, Yuichi; Ohtsuka, Yoshimichi; and Izumi, Yoshinori, 5,008,753, Cl. 358-171.000.
Hirleman, Edwin D., Jr., to United States of America, Air Force. Programmable detector configuration for Fraunhofer diffraction particle sizing instruments. 5,007,737, Cl. 356-336.000.
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Nakagawa, Masaru; Sumino, Fumio; Hiro, Masaaki; Kashimura, Noboru; and Nagahara, Shin, 5,008,168, Cl. 430-56.000.
Hirohata, Michio, to Canon Kabushiki Kaisha. Camera. 5,008,693, Cl. 354-214.000.
Hirota, Kunio: *See*—
Aoshima, Syozo; Hirota, Kunio; Sakakibara, Hiroshi; Sawai, Naoyuki; and Sato, Takeaki, 5,007,281, Cl. 72-406.000.
Hirschberg, Ekkehard: *See*—
Huebner, Dietmar; Nagel, Peter; Hirschberg, Ekkehard; Schoettle, Klaus; and Pavelka, Bozidar, 5,007,536, Cl. 206-394.000.
Hirumi, Yasushi, to Sony Corporation. Gray scale generating circuit for thermal printer. 5,008,837, Cl. 364-519.000.
Hirzel Suzy C. Double blocking members sealing a single opening means. 5,007,442, Cl. 132-218.000.
Hitachi Cable Limited: *See*—
Mizuniwa, Seiji; Hattori, Akio; Kurihara, Tooru; Aoyama, Seigi; and Nakamura, Konichi, 5,007,979, Cl. 156-605.000.
Hitachi Instrument Engineering Co., Ltd.: *See*—
Toita, Hiroshi; Tamura, Hifumi; Tobita, Issei; and Iwamoto, Hiroshi, 5,008,537, Cl. 250-309.000.
Hitachi Koki Co., Ltd.: *See*—
Kumasaka, Takao; and Simazaki, Yuzuru, 5,008,691, Cl. 346-157.000.
Onose, Tsukasa; Kikuchi, Yasuo; Ogawa, Toshitaka; and Seino, Minoru, 5,008,716, Cl. 355-322.000.
Hitachi, Ltd.: *See*—
Aoyama, Motoo; Koyama, Junichi; Uchikawa, Sadao; Bessho, Yasunori; Ozawa, Michihiro; Nakamura, Mitsunari; Nakajima, Akinobu; and Maruyama, Hiromi, 5,008,070, Cl. 376-419.000.
Beppu, Osamu; Moribe, Toshihiro; Tezuka, Youjiro; and Chuma, Akira, 5,008,573, Cl. 310-67.00R.
Isakozawa, Shigeto; and Hashimoto, Takahito, 5,008,536, Cl. 250-307.000.
Kawachi, Genshiro; Mimura, Akio; Konishi, Nobutake; Ono, Kikuo; and Suzuki, Takashi, 5,008,218, Cl. 437-201.000.
Kawasaki, Yoshinao; Kawahara, Hironobu; Sato, Yoshiaki; Fukuyama, Ryooji; Nojiri, Kazuo; and Torii, Yoshimi, 5,007,981, Cl. 156-643.000.
Kitamura, Youichi; and Tajimi, Michiko, 5,008,923, Cl. 379-3.000.
Kudo, Takanori; and Ishihara, Heigo, 5,008,128, Cl. 427-130.000.
Kumasaka, Takao; and Simazaki, Yuzuru, 5,008,691, Cl. 346-157.000.
Miyazaki, Hideki; Kanouda, Akihiko; Onda, Kenichi; and Matsuda, Yasuo, 5,008,586, Cl. 323-315.000.
Nishiyama, Nobumasa; Saito, Makoto; Ouchi, Yasuhide; Katoh, Yasuhiro; Kamo, Yoshihisa; Koizumi, Makoto; Aoi, Hajime; Sato, Naoki; and Tsuchiya, Reijiro, 5,008,761, Cl. 360-45.000.
Ohki, Hiroshi; Kamohara, Hideaki; and Miyake, Ryo, 5,007,732, Cl. 356-73.000.
Shibata, Masabumi; Ishiyama, Akira; and Takemoto, Takeshi, 5,008,817, Cl. 364-200.000.
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Kurosawa, Soichi; Iijima, Katsumi; Iizuka, Nobuyuki; Maeno, Yosimi; Takahashi, Shintaro; Watanabe, Yasuo; and Hiraga, Ryo, 5,008,072, Cl. 420-69.000.
Takanobu, Hiroshi, 5,008,589, Cl. 313-456.000.
Tanaka, Tsutomu; Oshida, Yoshitada; Shiba, Masataka; Nakashima, Naoto; and Funatsu, Ryuichi, 5,008,702, Cl. 355-52.000.
Toita, Hiroshi; Tamura, Hifumi; Tobita, Issei; and Iwamoto, Hiroshi, 5,008,537, Cl. 250-309.000.
Tsutsuta, Koji; and Seki, Kiwao, 5,008,627, Cl. 324-444.000.
Hitachi Maxell, Ltd.: *See*—
Kumada, Akio; Iochi, Takahiko; and Okada, Minoru, 5,008,581, Cl. 310-323.000.
Mikamo, Hisanobu; Odani, Noboru; and Shimizu, Akio, 5,008,152, Cl. 428-423.100.
Hitachi Metals, Ltd.: *See*—
Iwata, Hitoshi; Noguchi, Kazumi; Nishiyama, Toshikazu; and Shinohara, Tadashi, 5,008,767, Cl. 360-103.000.
Hoashimoto, Takeshi: *See*—
Suzuki, Akio; Kishita, Hirofumi; Sonegawa, Shigehisa; Matumura, Masaaki; and Hoashimoto, Takeshi, 5,007,726, Cl. 351-41.000.
Hochberg, Nelson. Lapboard. 5,007,192, Cl. 40-661.000.
Hodges, Jeffery D.: *See*—
Bly, Sara A.; Farrand, A. Brady; Hodges, Jeffery D.; Kupfer, Michael D.; Lewis, Brian T.; Maybury, William J.; Tallan, Michael L.; and Tom, Stephen B., 5,008,853, Cl. 364-900.000.
Hoechst Aktiengesellschaft: *See*—
Beck, Horst-Philipp; Emig, Gerhard; Wiesgickl, Gunther; Burg, Karlheinz; and Muck, Karl-Friedrich, 5,008,463, Cl. 568-487.000.
Engel, Dieter; Mondt, Josef; and Zimmerschied, Klaus, 5,008,155, Cl. 428-463.000.
Gerdau, Thomas; Kleiner, Hans-Jerg; Peuckert, Marcellus; Bruck, Martin; and Aldinger, Fritz, 5,008,423, Cl. 556-412.000.
Kleiner, Hans-Jerg; Gersdorf, Joachim; and Bastian, Udo, 5,008,426, Cl. 558-82.000.
Uhrig, Heinz; Ehl, Klaus; and Deubel, Reinhold, 5,008,442, Cl. 560-149.000.
Urbach, Hansjorg; Henning, Rainer; Teetz, Volker; Geiger, Rolf; Becker, Reinhard; and Gaul, Holger, 5,008,400, Cl. 548-452.000.
Wilharm, Peter; Buhr, Gerhard; and Fuchs, Juergen, 5,008,362, Cl. 528-28.000.
Hoechst Celanese Corporation: *See*—
Elango, Varadaraj; and Davenport, Kenneth G., 5,008,439, Cl. 560-61.000.
Hsieh, Shane; and Stahlhofen, Paul, 5,008,175, Cl. 430-155.000.
Nichols, Carl S., 5,008,230, Cl. 502-170.000.
Platzer, Stephan J. W., 5,008,174, Cl. 430-143.000.
Wadhwa, Lachhman; and Steurer, Andrew M., 5,008,316, Cl. 524-230.000.
Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Davis, Larry, 5,008,264, Cl. 514-253.000.
Hrib, Nicholas J., 5,008,407, Cl. 549-383.000.
Martin, Lawrence L.; and Setescak, Linda L., 5,008,285, Cl. 514-450.000.
Hoeck, Peter: *See*—
Bayerlein, Jorg; Hecker, Eric; Hoeck, Peter; and Milani, Francesco, 5,007,688, Cl. 312-7.200.
Hoefke, Wolfgang: *See*—
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; Hoefke, Wolfgang; Arndts, Dietrich; and Streller, Ilse, 5,008,273, Cl. 514-301.000.
Hoever, Franz-Peter: *See*—
Kruger, Bernd-Wieland; Sasse, Klaus; Hoever, Franz-Peter; Nentwig, Gunther; and Behrenz, Wolfgang, 5,008,261, Cl. 514-212.000.
Hoffman, Edward J.: *See*—
Mazziotta, John C.; Daghighian, Farhad; and Hoffman, Edward J., 5,008,546, Cl. 250-366.000.
Hoffmann, Armin; Ludwig, Wolfgang; and Leibhard, Erich, to Hilti Aktiengesellschaft. Attachment member anchored by hardenable mass to panel-shaped structural component. 5,007,780, Cl. 411-82.000.
Hoffmann, Bernd F. W.: *See*—
Hennings, Detlev; Hoffmann, Bernd F. W.; and Nutto, Markus, 5,008,646, Cl. 338-20.000.
Hoffmann, Karlheinz: *See*—
Grohn, Michael; Murwald, Mario; Thoma, Frank; and Hoffmann, Karlheinz, 5,007,401, Cl. 123-509.000.
Hoffmann-La Roche Inc.: *See*—
Coffen, David L.; Madan, Pradeep B.; and Schwartz, Alan, 5,008,411, Cl. 549-519.000.
Hogan, Thomas: *See*—
Markinson, Scott; Schuster, Michael; and Hogan, Thomas, 5,008,636, Cl. 331-2.000.

Hohmann, Frank G.: *See—*
Richter, Simon J.; and Hohmann, Frank G., 5,007,565, Cl. 222-481.000.
Hoiberg, Dane A. Leak damage prevention system. 5,008,650, Cl. 340-604.000.
Hoke, David: *See—*
Merkel, Paul B.; and Hoke, David, 5,008,180, Cl. 430-552.000.
Holbein, Erwin: *See—*
Busenhart, Peter; Schneeberger, Ruedi; Holbein, Erwin; Wirz, Armin; Flueli, Adolf; and Maier, Hansueli, 5,007,595, Cl. 242-46.400.
Holden, Homer N.; and Loyer, Philip K., to Dayco Products, Inc. Vacuum cleaner hose construction, insert therefor and methods of making the same. 5,007,839, Cl. 439-191.000.
Holland, Andrew P. Blind anchoring of wall fixtures. 5,007,223, Cl. 52-741.000.
Holland, G. Neil: *See—*
Vanek, Denis W.; and Holland, G. Neil, 5,007,425, Cl. 128-653.00A.
Holley, Carl A. Process for pelletizing highly reactive powders. 5,008,055, Cl. 264-117.000.
Holliger, Herbert, to Sandoz Ltd. Chromium complexes of sulfo group containing disazo compounds having a resorcinol biscoupling component radical. 5,008,379, Cl. 534-684.000.
Holling, Ronald W., to Whirlpool Corporation. Relay control method and apparatus for a domestic appliance. 5,008,516, Cl. 219-519.000.
Hollister, Guy G.: *See—*
Fazzina, Francis P.; and Hollister, Guy G., 5,007,526, Cl. 198-787.000.
Holloway, Gary M.: *See—*
Palmer, Larry R.; Collins, Joseph M.; and Holloway, Gary M., 5,008,667, Cl. 340-984.000.
Holm, Reimer: *See—*
Thurm, Siegfried; Holm, Reimer; Leuschke, Christian; Rathmann, Dietrich; and Schrader, Lutz, 5,008,148, Cl. 428-336.000.
Holmquist, Ralph E.; and Janson, David A., to Eaton Corporation. Limited slip differential. 5,007,886, Cl. 475-231.000.
Holtermann, Dennis L.: *See—*
Zones, Stacy I.; Santilli, Donald S.; Ziemer, James; Holtermann, Dennis L.; Pecoraro, Theresa A.; and Innes, Robert A., 5,007,997, Cl. 208-46.000.
Hom, Harvey K. Y., to ITT Corporation. Cross-fed FET power-chip. 5,008,633, Cl. 330-277.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Kamata, Yoshiharu; Nagatsuma, Nobuyoshi; Ozawa, Mituharu; and Yoshioka, Hiroshi, 5,007,154, Cl. 29-430.000.
Niizato, Tomonori; Noguchi, Katsumi; and Tsukimura, Kiyoshi, 5,007,392, Cl. 123-193.00H.
Nishiuchi, Shohachi; Ohta, Shigeo; Imai, Hitoshi; and Meguro, Haruo, 5,007,266, Cl. 72-44.000.
Noji, Akio; Kamimura, Kenji; and Tsuzuki, Sadachika, 5,008,557, Cl. 250-561.000.
Honda, Makoto: *See—*
Tominaga, Takashi; Nishiyama, Souji; Sakuramoto, Takahumi; and Honda, Makoto, 5,008,151, Cl. 428-343.000.
Honda, Norimasa; and Sano, Masahiro, to Daikin Industries Ltd. Fluororesin-containing coating composition and use thereof. 5,008,042, Cl. 252-518.000.
Honeywell Inc.: *See—*
Ach, William D.; Anderson, Edmund J.; Behrends, Lynn B.; Desrude, Wayne P.; and Klos, Gene J., 5,007,527, Cl. 198-803.010.
Chang, Chin L., 5,007,695, Cl. 350-96.140.
Liu, Michael S.; and Chen, Huang-Joung, 5,008,208, Cl. 437-31.000.
Stout, James C., 5,007,699, Cl. 350-96.160.
Honeywell Regelsysteme GmbH: *See—*
Schindler, Juergen; and Heinen, Hartwig, 5,008,775, Cl. 361-383.000.
Hong, Gilbert H., to Exion Technology, Inc. Photochemically stable mid and deep ultraviolet pellicles. 5,008,156, Cl. 428-506.000.
Hong, Yeong-Man: *See—*
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,008,374, Cl. 530-351.000.
Honma, Isao: *See—*
Komai, Takeshi; Matsuyama, Kazuo; and Honma, Isao, 5,008,353, Cl. 526-230.500.
Hood, Warwick J.: *See—*
Abraham, Joseph; Hamonet, Michael; Gracie, Phillip; and Hood, Warwick J., 5,007,360, Cl. 114-90.000.
Hope, Michael J.: *See—*
Cullis, Pieter R.; Hope, Michael J.; and Bally, Marcel B., 5,008,050, Cl. 264-4.300.
Hopfensperger, Reinhold; and Eichhorn, Werner, to Standard Elektrik Lorenz Aktiengesellschaft. Impeller made from a sheet-metal disk and method of manufacturing same. 5,007,801, Cl. 416-223.00R.
Hopkins, Michael H. Electric fan for patio umbrella. 5,007,811, Cl. 135-16.000.
Hopper, Hans P.: *See—*
Dean, Alan J.; and Hopper, Hans P., 5,007,852, Cl. 439-201.000.
Horaguchi, Tatsuo: *See—*
Takahashi, Toshihiro; Horaguchi, Tatsuo; Nakamaru, Koichi; and Suzuki, Yoshikuni, 5,008,266, Cl. 514-259.000.
Horino, Mamoru, to Yamaha Corporation. Rotation control device for a rotary head in a magnetic recording and reproducing device. 5,008,763, Cl. 360-70.000.
Horio, Nasakazu: *See—*
Watanabe, Eiji; Horio, Nasakazu; and Suzuki, Kenzi, 5,008,224, Cl. 502-63.000.
Horn, Marcus J., to Hewlett-Packard Company. Method of facilitating detection of amino acid derivatives with enhanced sensitivity. 5,008,205, Cl. 436-89.000.
Horning, John H., Jr. Bag opener apparatus. 5,007,171, Cl. 30-294.000.
Horst, James F.: *See—*
McKenna, Frank J.; Horst, Richard K.; Horst, James F.; and Arney, Rodney L., 5,007,772, Cl. 406-39.000.
Horst, Richard K.: *See—*
McKenna, Frank J.; Horst, Richard K.; Horst, James F.; and Arney, Rodney L., 5,007,772, Cl. 406-39.000.
Horton, Roger L.: *See—*
Williams, Dennis A.; Horton, Roger L.; Newlove, John C.; and Chumley, Robert E., 5,007,481, Cl. 166-300.000.
Horvath, Daniel P., to Hosehandlers International Inc. Hose and cable support. 5,007,605, Cl. 248-62.000.
Hosehandlers International Inc.: *See—*
Horvath, Daniel P., 5,007,605, Cl. 248-62.000.
Hoshi, Masayuki: *See—*
Rubinstein, Sergio; and Hoshi, Masayuki, 5,007,834, Cl. 433-173.000.
Hosiden Corporation: *See—*
Matsumoto, Koji, 5,007,851, Cl. 439-188.000.
Hosiden Electronics Co., Ltd.: *See—*
Inaba, Hirofumi; and Nishikawa, Yasunori, 5,007,850, Cl. 439-182.000.
Hosoda, Takuya; Morishita, Mitsuhiro; and Tamura, Takashi, to Ando Electric Co., Ltd. Apparatus for generating pulse-like constant current having variable pulse width. 5,008,562, Cl. 307-265.000.
Hou, Mei-Wen H. Auxiliary mirror angle changing device for a main and auxiliary rearview mirror. 5,007,724, Cl. 350-604.000.
Houng, Vichai. Frame assembly for case or similar article. 5,007,510, Cl. 190-122.000.
House, Wilford: *See—*
Goodwin, John D.; Goodwin, Samuel D.; House, Wilford; and Farrar, James, 5,008,839, Cl. 364-550.000.
Hovens, Paulus J. M., to U.S. Philips Corporation. Picture display device including a waveform generator/and a compensation circuit, and integrated circuit incorporating the same. 5,008,659, Cl. 340-812.000.
Howells, Joseph A.; Jachmann, Emil F.; and Rubenstein, Robert L. Dictate/transcribe control for digital dictation system. 5,008,871, Cl. 369-28.000.
Hoy, Kenneth L.: *See—*
Richey, Forrest A., Jr.; and Hoy, Kenneth L., 5,008,336, Cl. 525-124.000.
Hoya Corporation: *See—*
Hara, Koichi A., 5,008,219, Cl. 501-12.000.
Nakajima, Yuji; and Mochizuki, Masashi, 5,007,710, Cl. 350-166.000.
Sawamoto, Takeyuki; Nomura, Masashi; and Tarumi, Niro, 5,008,354, Cl. 526-246.000.
Uno, Ken; Fujino, Takuo; and Nakamori, Hideki, 5,008,002, Cl. 204-192.310.
Hrib, Nicholas J., to Hoechst-Roussel Pharmaceuticals Inc. Method of synthesizing forskolin from 9-deoxyforskolin. 5,008,407, Cl. 549-383.000.
Hsieh, Shane; and Stahlhofen, Paul, to Hoechst Celanese Corporation. Copying materials. 5,008,175, Cl. 430-155.000.
Hsu, David. Soldering tool. 5,007,405, Cl. 126-414.000.
Htun, Myat T.: *See—*
Engstrand, Per O.; Hammar, Lars-Ake; Htun, Myat T.; and Pettersson, Rune L., 5,007,985, Cl. 162-26.000.
Huang, Hung-Chang W.; and Totta, Paul A., to International Business Machines Corporation. Process for improved contact stud structure for semiconductor devices. 5,008,216, Cl. 437-192.000.
Huang, Hung-Chang W.; and Totta, Paul A., to International Business Machines Corporation. Contact stud structure for semiconductor devices. 5,008,730, Cl. 357-68.000.
Huang, Kevin C.; Kutz, Karl H.; McNamara, Timothy J.; Seals, Victoria E.; and Still, Gregory S., to International Business Machines Corporation. Event-controlled error injection system. 5,008,885, Cl. 371-3.000.
Huang, Ming-Chuan. Simply-constructed instrument for measuring horizontal line, vertical line and angles. 5,007,176, Cl. 33-377.000.
Huang, Wen-Ling M.: *See—*
Chiang, Shang-yi; Huang, Wen-Ling M.; Drowley, Clifford I.; and Voorde, Paul V., 5,008,210, Cl. 437-33.000.
Hubeler, Wolfgang: *See—*
Herrmann, Hellmut A.; and Hubeler, Wolfgang, 5,007,970, Cl. 134-42.000.
Huber, Helmut X.: *See—*
Ozin, Geoffrey A.; Huber, Helmut X.; Prokopowicz, Richard A.; and Godber, John, 5,008,234, Cl. 502-326.000.
Hudson, Alice P.: *See—*
Woodward, Fred E.; and Hudson, Alice P., 5,008,039, Cl. 252-392.000.
Huebner, Dietmar; Nagel, Peter; Hirschberg, Ekkehard; Schoettle, Klaus; and Pavelka, Bozidar, to BASF Aktiengesellschaft. Packaging container for a plurality of recording media in the form of a circle. 5,007,536, Cl. 206-394.000.
Huels Aktiengesellschaft: *See—*
Kaufhold, Manfred; and Metz, Josef, 5,008,429, Cl. 558-374.000.

Hughes Aircraft Company: *See—*
Brown, Raymond L.; and Shock, Clifford L., Jr., 5,008,492, Cl. 174-52.400.
Chern, Mao-Jin; Smith, Ronald T.; and Frogget, Brent C., 5,007,690, Cl. 350-3.680.
Congleton, Helen; Slaton, Carol L.; Koudounaris, Angelo; Smith, Gerald B.; and Soto, Vicente, 5,007,576, Cl. 228-103.000.
Greene, Sidney R., 5,007,347, Cl. 102-473.000.
Harvey, Robin T., 5,008,798, Cl. 363-59.000.
Herman, Martin I., 5,008,678, Cl. 342-158.000.
Lee, Alfred; and Kain, Daniel T., 5,008,905, Cl. 377-77.000.
McFarlane, Ross A., 5,008,890, Cl. 372-41.000.
Stevens, Eugene H.; and Utlaut, Mark W., 5,008,602, Cl. 318-561.000.

Huhtamaki Oy: *See—*
Ingberg, Grels D.; Penttila, Ritva L. A.; Tokola, Reino O.; and Tenhunen, Raimo, 5,008,388, Cl. 540-145.000.

Huisman, Frederikus R. J.; Oversluizen, Gerrit; and Martens, Jan W. D., to U.S. Philips Corp. Display arrangement having pin diode switching elements. 5,008,590, Cl. 313-500.000.

Hukuhara, Takahito, to 501 Toa Medical Electronics Co., Ltd. Apparatus for measuring a liquid specimen. 5,007,296, Cl. 73-864.870.

Hull, Edward I.: *See—*
Abramczyk, William M.; Hull, Edward I.; and Feustel, James R., 5,007,662, Cl. 280-739.000.

Hull, Harry F.; and Da Silva, Ivan P. Electrolytic processing apparatus and method with time multiplexed power supply. 5,007,993, Cl. 204-228.000.

Huls Aktiengsellschaft: *See—*
Hellermann, Walter; Herrmann, Christoph; Fuchs, Hans-Bernd; Nordsiek, Karl-Heinz; and Wolpers, Jurgen, 5,008,343, Cl. 525-316.000.

Hunter, Frank R., to Weyerhaeuser Company. Isocyanate modified cellulose products and method for their manufacture. 5,008,359, Cl. 527-103.000.

Hunter-Melnor, Inc.: *See—*
Chow, Ho; and Testa, Joseph E., 5,007,588, Cl. 239-318.000.

Hurtgen, Jerome P., to General Electric Company. Method of selectively connecting a set of winding means for a dynamoelectric machine into at least two different electrical configurations. 5,007,156, Cl. 29-596.000.

Husler, Rinaldo; Klingert, Bernd; Rembold, Manfred; and Steiner, Eginhard, to Ciba-Geigy Corporation. Titanocenes, the use thereof, and N-substituted pyrroles. 5,008,302, Cl. 522-14.000.

Hussain, Saadat, to Ethyl Corporation. Decabromodiphenyl alkane process. 5,008,477, Cl. 570-208.000.

Hussain, Zahid: *See—*
Kelleher, Brian M.; and Hussain, Zahid, 5,008,838, Cl. 364-522.000.

Hutchinson: *See—*
Guillon, Henri, 5,007,202, Cl. 49-441.000.

Hwang, Feng-Lin. Air-leak indicator for vehicle tire. 5,007,365, Cl. 116-34.00R.

Hyche, Kenneth W.; and Gose, William C., to Eastman Kodak Company. Aqueous additive systems, methods and polymeric particles. 5,007,961, Cl. 106-18.000.

Hydromatik GmbH: *See—*
Wagenseil, Ludwig, 5,007,332, Cl. 92-181.00R.

Hyodo, Touru: *See—*
Nakamura, Takashi; Tanaka, Haruhiko; Hyodo, Touru; and Osanai, Yasuhiro, 5,008,601, Cl. 318-268.000.

I.B.E. Co., Ltd.: *See—*
Yamashita, Shoji, 5,008,097, Cl. 423-493.000.

I.C.I.-Pharma: *See—*
Bird, Thomas G. C.; and Jung, Frederick H., 5,008,258, Cl. 514-201.000.
Siret, Patrice J.; Jung, Frederick H.; and Bell, William, 5,008,259, Cl. 514-202.000.

I-Stat Corporation: *See—*
Lauks, Imants R.; Wieck, Henry J.; and Bandru, Gregory M., 5,008,616, Cl. 324-158.00F.

Ibe, Hiromitu; Akutagawa, Ichiro; and Matsuzaki, Kunimitsu, to Asmo Co., Ltd.; and Somar Corporation. Balancing putty. 5,008,309, Cl. 523-442.000.

Ibe, Hiroyuki; and Mori, Takashi, to Shin-Etsu Handotai Company Limited. Apparatus for shaping ingots into right circular cylindrical form. 5,007,204, Cl. 51-165.770.

Ichihashi, Hiroo: *See—*
Ebinuma, Ryuichi; Hattori, Yoshifumi; and Ichihashi, Hiroo, 5,008,688, Cl. 346-140.00R.

Ichikoh Industries, Ltd.: *See—*
Nakahara, Toshiro, 5,008,588, Cl. 313-318.000.

Ichinomiya, Keizi: *See—*
Arai, Kiyotaka; Sumoto, Hirofumi; and Ichinomiya, Keizi, 5,008,789, Cl. 362-255.000.

ICI Americas Inc.: *See—*
Brown, Richard W., 5,008,448, Cl. 562-429.000.

Ide, Russell D. Progressive cavity drive train with elastomeric joint assembly for use in downhole drilling. 5,007,490, Cl. 175-107.000.

Ide, Russell D. Downhole drilling apparatus progressive cavity drive train with sealed coupling. 5,007,491, Cl. 175-107.000.

Ide, Takanobu, to Nissan Motor Company, Ltd. Fluid filled elastomeric damping device. 5,007,304, Cl. 74-573.00F.

Ide, Yukio: *See—*
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Olsen, Steven A.; Cronin, William J.; Jarvis, Ben L.; and McMillan, Jeff G., 5,008,929, Cl. 379-112.000.
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Ketcham, Stephen O.; Ortiz, Paul W.; Jarvis, Jamie S.; and McCray, Clyde S., 5,007,316, Cl. 83-167.000.
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Brychta, Jaroslav; Lutisan, Eduard; and Jirkovsky, Vladimir, 5,007,394, Cl. 123-279.000.
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Chiang, William G.; Jobbins, Richard M.; and Popule, Michael P., 5,008,444, Cl. 560-222.000.
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Linsky, Cary B.; and Cunningham, Timothy J., 5,007,916, Cl. 606-151.000.
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Orman, Charles R.; Johnson, Paul E.; and Adams, Bruce C., 5,007,335, Cl. 99-487.000.
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Joslyn Corporation: *See—*
Tonkiss, David W., 5,007,465, Cl. 140-150.000.
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Siret, Patrice J.; Jung, Frederick H.; and Bell, William, 5,008,259, Cl. 514-202.000.
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Yanagisawa, Gennai, 5,007,355, Cl. 112-54.000.
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Mizumoto, Takeshi; and Murakami, Yoshiaki, 5,007,882, Cl. 474-84.000.
Saotome, Yoshimi; Kuchiki, Kiyotsuna; and Hayashi, Norihiko, 5,007,544, Cl. 212-265.000.
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Arai, Seiji, 5,008,685, Cl. 346-108.000.
Gomikawa, Takao, 5,008,750, Cl. 358-147.000.
Inoue, Akifumi, 5,008,846, Cl. 364-707.000.
Iwahashi, Hiroshi, 5,008,856, Cl. 360-185.000.
Kameda, Tsuneji, 5,008,222, Cl. 501-134.000.
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Kikuchi, Katsuya, 5,007,407, Cl. 128-6.000.
Mizoguchi, Hiroshi, 5,008,852, Cl. 364-900.000.
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Minoura, Jun; Takahahi, Shigeyuki; Kato, Hisaki; Ito, Toshiyasu; Mori, Takaaki; Kato, Mamoru; Shimada, Junichi; and Okabayashi, Katsuaki, 5,007,718, Cl. 350-357.000.
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Crowe, Christopher; Cordell, Ralph L.; and Kahng, Seun K., 5,007,292, Cl. 73-654.000.

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Dietlein, John E.; Kamis, Russel P.; and Dixon, Peggy L., 5,007,765, Cl. 404-74.000.

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Masuda, Takeshi; Yagi, Susumu; Okabe, Sakiichi; Kamishima, Yoichi; and Kawagoe, Kazuo, 5,008,580, Cl. 310-321.000.

Kamiya, Akira: *See*—
Kawashima, Kouzo; Morikawa, Takao; Aoyama, Teruo; and Kamiya, Akira, 5,008,331, Cl. 525-84.000.

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Katakami, Tsutomu; Yokoyama, Tatsuro; Miyamoto, Michihiko; Mori, Haruki; Kawauchi, Nobuya; Nobori, Tadahito; Sannohe, Kunio; Kamiya, Joji; Ishii, Masaaki; and Yoshihara, Kanji, 5,008,267, Cl. 514-269.000.

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Yamauchi, Hiroshi; Sugiyama, Isao; Saito, Isao; Nomoto, Seiichiro; Kamiya, Takashi; Machida, Yoshimasa; and Negi, Shigeto, 5,008,260, Cl. 514-202.000.

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Utsunomiya, Masayuki; Fujita, Shigeo; Nozawa, Toshiyuki; and Kamiyama, Morihiro, 5,008,401, Cl. 548-455.000.

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Nishiyama, Nobumasa; Saito, Makoto; Ouchi, Yasuhide; Katoh, Yasuhiro; Kamo, Yoshihisa; Koizumi, Makoto; Aoi, Hajime; Sato, Naoki; and Tsuchiya, Reijiro, 5,008,761, Cl. 360-45.000.

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Kume, Toyohiko; Goto, Toshio; Kamochi, Atsumi; Yanagi, Akihiko; Miyauchi, Hiroshi; and Asami, Tadao, 5,007,952, Cl. 71-73.000.

Kamohara, Hideaki: *See*—
Ohki, Hiroshi; Kamohara, Hideaki; and Miyake, Ryo, 5,007,732, Cl. 356-73.000.

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Saito, Noriaki; Kanagawa, Shuichi; and Sakamoto, Hideshi, 5,008,350, Cl. 525-507.000.

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Kanai, Shigeru, to Tachi-S Co. Ltd. Operation mechanism of lifter for automotive seat. 5,007,611, Cl. 248-422.000.

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Kanao, Shiro. Synthetic resin underground pipe having high pressure-withstanding capability. 5,007,462, Cl. 138-154.000.

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Kanda, Yutaka; Yasuzawa, Tohru; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; and Morimoto, Makoto, to Kyowa Hakko Kogyo Co., Ltd. DC-88A derivatives. 5,008,271, Cl. 514-292.000.

Kane, Robert C.: *See*—
Goronkin, Herbert; and Kane, Robert C., 5,007,873, Cl. 445-49.000.

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Kondo, Hirosato; Taguchi, Masahiro; Inoue, Yoshimasa; and Sakamoto, Fumio, 5,008,389, Cl. 544-343.000.

Kaneguchi, Toshio: *See*—
Tsukisaka, Ryogo; Kondo, Satoshi; Kaneguchi, Toshio; and Deguchi, Takashi, 5,007,964, Cl. 106-464.000.

Kaneko, Akira: *See*—
Nakajima, Masashi; Tomita, Nobuo; Suzaki, Kenji; Kaneko, Akira; and Sawaki, Mikio, 5,008,455, Cl. 564-300.000.

Kaneko, Koji; and Sugino, Yasuyuki, to Sharp Kabushiki Kaisha. Rotary head type magnetic recording/reproducing device. 5,008,769, Cl. 360-130.240.

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Kashiwadate, Ken; Satake, Yoshikatsu; Kaneko, Takashi; Tada, Masahiro; and Katto, Takayuki, 5,008,370, Cl. 528-481.000.

Kanemoto, Yoshimi: *See*—
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Kanesaka, Hiroshi: *See*—
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Kaneta, Mayumi: *See*—
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,008,374, Cl. 530-351.000.

Kano, Tokio: *See*—
Takahashi, Yasuo; Suzuki, Kazuo; Niimura, Toshinobu; and Kano, Tokio, 5,007,995, Cl. 204-299.00R.

Kanoh, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Digital/analog converter. 5,008,676, Cl. 341-154.000.

Kanouda, Akihiko: *See*—
Miyazaki, Hideki; Kanouda, Akihiko; Onda, Kenichi; and Matsuda, Yasuo, 5,008,586, Cl. 323-315.000.

Kansai Engineering Co., Ltd.: *See*—
Sasae, Taiichio; and Taguchi, Yoshio, 5,007,965, Cl. 106-800.000.

Kansai Paint Co., Ltd.: *See*—
Nakai, Noboru; and Isozaki, Osamu, 5,008,328, Cl. 524-759.000.
Shirai, Shinji; Negishi, Hiroyuki; Tomihashi, Nobuyuki; and Yamane, Masayuki, 5,008,327, Cl. 524-544.000.

Kanzaki Paper Manufacturing Company Limited: *See*—
Yoshizawa, Katsuaki; and Oeda, Yoshitaka, 5,008,231, Cl. 503-207.000.

Kao, Chun-Hsien; and Chen, Fu-Te. Automatic sterilizing device of the telephone. 5,008,933, Cl. 379-452.000.

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Kondo, Tetsuya; and Kawai, Noboru, 5,008,176, Cl. 430-272.000.

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Fujita, Yoshiaki; Kawai, Satoshi; and Takeguchi, Shunsuke, 5,007,956, Cl. 75-238.000.

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Shimamoto, Hiroshi; Suzaki, Hideyuki; Yamaguchi, Yukio; and Kawano, Atsushi, 5,008,862, Cl. 367-105.000.
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Yoshida, Ryuichi; Yamamura, Tetsushi; and Kadota, Koji, 5,007,495, Cl. 180-117.000.

Kawasaki Steel Corp.: *See—*
Takahashi, Teruyuki; and Kohno, Mitsuru, 5,008,308, Cl. 523-406.000.

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Katakami, Tsutomu; Yokoyama, Tatsuro; Miyamoto, Michihiko; Mori, Haruki; Kawauchi, Nobuya; Nobori, Tadahito; Sannohe, Kunio; Kamiya, Joji; Ishii, Masaaki; and Yoshihara, Kanji, 5,008,267, Cl. 514-269.000.

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Matthews, Thomas E.; and Touton, Charles P., 5,007,221, Cl. 52-464.000.

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Asaoka, Masaharu, 5,007,459, Cl. 137-625.650.

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Cunningham, William R.; Amareno, Carmelo S.; and Kayan, Helmut, 5,008,519, Cl. 235-383.000.

Kayser, Michael: *See—*
Franckowiak, Gerhard; Stoltefuss, Jurgen; Bechem, Martin; Gross, Rainer; Kayser, Michael; Hebisch, Siegbert; and Schramm, Matthias, 5,008,279, Cl. 514-354.000.

Kazar, Dennis M., to Laser Link, Inc.; and Wells, William K., Jr. Ornamental light display apparatus. 5,008,595, Cl. 315-178.000.

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Scarberry, Paul W.; Kazemba, Rodney L.; and Hestekin, Ralph A., 5,007,744, Cl. 383-37.000.

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Blau, David A.; Meadows, John; Sherlock, Thomas M.; Stengel, Fred; Studholme, Robert M.; Wada, Kenneth R.; and Kepner, Christopher J., 5,008,081, Cl. 422-64.000.

Keane, Brian, to Vaqua Limited. Centrifugal pump. 5,007,798, Cl. 415-88.000.

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Block, Michael J.; Kelley, Arnold E.; and Skripek, Milan, 5,007,987, Cl. 201-17.000.

Kelley, Louis E., to Instruments for Research and Industry I^2R, Inc. Insulated container for biological samples. 5,008,084, Cl. 422-102.000.

Kelley, Michael P., to Zebco Corporation. Weed ring for trolling motor. 5,007,867, Cl. 440-71.000.

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Beach, Wayne H.; and Shirk, Steven D., 5,007,685, Cl. 299-91.000.
Greenfield, Mark S., 5,008,073, Cl. 420-121.000.

Kennan, Linda D.; Knapp, Theodore L.; Monroe, Carl M.; and Skostins, Olgerts, to Dow Corning Corporation. Treated silica for reinforcing silicone elastomer. 5,008,305, Cl. 523-212.000.

Kennedy, Christopher R.; and Aghajanian, Michael K., to Lanxide Technology Company, LP. Method for forming metal matrix composite bodies containing three-dimensionally interconnected comatrices and products produced thereby. 5,007,475, Cl. 164-97.000.

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Neidermeyer, Uwe; Kragl, Udo; Kula, Maria R.; Wandrey, Christian; Makrylaleas, Kyriakos; and Drauz, Karlheinz, 5,008,192, Cl. 435-128.000.

Kernion, Mark C.; and Davies, Ben, deceased (by Davies, Evelyn, executrix), to Dresser Industries, Inc. Refractory slide gate assembly and method. 5,007,615, Cl. 251-368.000.

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Stracher, Alfred; and Kesner, Leo, 5,008,288, Cl. 514-535.000.

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Wilder, Paul R.; and Kesterman, James E., 5,007,468, Cl. 141-209.000.

Ketcham, Stephen O.; Ortiz, Paul W.; Jarvis, Jamie S.; and McCray, Clyde S., to General Electric Company. Apparatus for cutting sheet materials. 5,007,316, Cl. 83-167.000.

Ketcham, Thomas D., to Corning Incorporated. High toughness ceramic alloys. 5,008,221, Cl. 501-103.000.

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Key, Gary R.; and Black, David C., to International Business Machines Corp. Automatic baud rate detection. 5,008,902, Cl. 375-10.000.

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Fu, Jaw K.; Merritt, Arch J., deceased; and Smith, John R., 5,007,771, Cl. 405-258.000.

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Scobie, William B.; and Frenzel, Robert A., 5,007,330, Cl. 92-120.000.

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Shimizu, Nobuaki; and Kezuka, Hiroaki, 5,008,445, Cl. 560-243.000.

Kheiri, Mohammad A., to Miles Inc. Easy handling reagent strip. 5,008,077, Cl. 422-56.000.

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Kidd, Roy E.; Andrejasich, Raymond J.; Michel, Hilary; and Slocum, Laurence S., to Emhart Industries, Inc. Fluid detector with overfill probe. 5,008,653, Cl. 340-620.000.

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Surash, Robert G.; and Kiehl, Gary G., 5,008,020, Cl. 210-751.000.

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Kikuchi, Ikuya; and Sato, Ryo, to Pioneer Electronic Corporation. Optical pick-up unit. 5,007,712, Cl. 350-255.000.

Kikuchi, Katsuya, to Kabushiki Kaisha Toshiba. Endoscope having picture image freeze device. 5,007,407, Cl. 128-6.000.

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Onose, Tsukasa; Kikuchi, Yasuo; Ogawa, Toshitaka; and Seino, Minoru, 5,008,716, Cl. 355-322.000.

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Killgoar, Paul C., Jr.; Samus, Marsha A.; Koller, Robert D., Sr.; and Hemenway, Carl P., to Rohm and Haas Company. Novel damping compositions. 5,008,324, Cl. 524-504.000.

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Dickie, William; Cavallaro, Joseph A.; and Killmeyer, Richard P., 5,008,083, Cl. 422-101.000.

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Christopher, Kenneth W., Jr.; Feigenbaum, Barry A.; Kim, Jin; and Love, Douglas C., 5,008,820, Cl. 364-200.000.

Kim Manufacturing Company: *See*—
Carroll, Joseph W., Jr., 5,007,608, Cl. 248-297.200.

Kim, Sam H. End-locking device for slide fasteners. 5,007,145, Cl. 24-433.000.

Kim, Tae Y., to SamSung Electronics Co., Ltd. Support unit for home appliances. 5,007,607, Cl. 248-188.900.

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King, Bruce A.: *See*—
Thill, Bruce P.; and King, Bruce A., 5,008,347, Cl. 525-433.000.

King, David L.; Cooper, Michael D.; and Faber, Michael A., to Catalytica, Inc. Acid catalyzed process. 5,008,468, Cl. 568-697.000.

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Zierhut, Clarence D., 5,007,754, Cl. 401-174.000.

King, Karen L.: *See*—
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Kinne, Daniel J.: *See*—
Benecke, Arnold G.; Kinne, Daniel J.; and Wnuk, Andrew J., 5,008,110, Cl. 424-448.000.

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Kipfelsberger, Christian: *See*—
Kaeufer, Helmut; Kipfelsberger, Christian; and Leyrer, Karl-Heinz, 5,008,059, Cl. 264-230.000.

Kiraly, Jeno: *See*—
Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponacz, Anna; Eifert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo ; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.

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Kirschner, Kraig A., to Automated Fire Control, Incorporated. Adjustable load bolt adapter bracket assembly. 5,007,603, Cl. 248-59.000.

Kisfaludy, Lajos, deceased: *See*—
Schon, Istvan; Nyeki, Olga; Kisfaludy, Lajos, deceased; Denes, Laszlo; Hajos, Gyorgy; and Szporny, Laszlo, 5,008,246, Cl. 514-18.000.

Kisfaludy, Maria, Marta Kisfaludy, Andras Kisfaludy, legal heirs: *See*— Schon, Istvan; Nyeki, Olga; Kisfaludy, Lajos, deceased; Denes, Laszlo; Hajos, Gyorgy; and Szporny, Laszlo, 5,008,246, Cl. 514-18.000.

Kishida, Kazuo; Kitai, Kiyokazu; and Mohri, Masaaki, to Mitsubishi Rayon Company, Ltd. Impact modifier for thermoplastic resin having good heat discoloration resistance and heat deterioration resistance, and thermoplastic resin composition comprising this impact modifier. 5,008,313, Cl. 524-120.000.

Kishita, Hirofumi: *See*—
Suzuki, Akio; Kishita, Hirofumi; Sonegawa, Shigehisa; Matumura, Masaaki; and Hoashimoto, Takeshi, 5,007,726, Cl. 351-41.000.

Kiss, Akos: *See*—
Speer, Dietrich; Kiss, Akos; Kleinschmit, Peter; and Hanich, Juergen, 5,008,223, Cl. 106-450.000.

Kitagawa, Hiroji, to Kitagawa Industries Co., Ltd. Conductive seal. 5,008,485, Cl. 174-35.0GC.

Kitagawa Industries Co., Ltd.: *See*—
Kitagawa, Hiroji, 5,008,485, Cl. 174-35.0GC.
Nakagawa, Asaharu, 5,008,488, Cl. 174-36.000.

Kitaguchi, Hiromasa. Crankless engine. 5,007,385, Cl. 123-48.00B.

Kitahata, Roy S., to Chamberlain Group, The. Direct current motor assembly with rectifier module. 5,008,574, Cl. 310-68.00D.

Kitai, Kiyokazu: *See*—
Kishida, Kazuo; Kitai, Kiyokazu; and Mohri, Masaaki, 5,008,313, Cl. 524-120.000.

Kitamura, Toru; Ohashi, Yoshio; Sekino, Masami; and Murakawa, Kenichi, to Research Association for Petroleum Alternatives Development. Process for hydrogenation of heavy oil. 5,008,001, Cl. 208-143.000.

Kitamura, Youichi; and Tajimi, Michiko, to Hitachi, Ltd. Testable echo cancelling method and device. 5,008,923, Cl. 379-3.000.

Kitasato Kenkyusho: *See*—
Omura, Satoshi; and Itoh, Zen, 5,008,249, Cl. 514-29.000.

Kitaura, Hiromu; Isobe, Mitsuo; Kawahara, Isao; Hirauchi, Yoshio; Ninomiya, Yuichi; Ohtsuka, Yoshimichi; and Izumi, Yoshinori, to Matsushita Electric Industrial Co.; and Nippon Hoso Kyokai. Clamp system used for television signal. 5,008,753, Cl. 358-171.000.

Kiyono, Mikio, to NEC Corporation. Multilevel optical signal transmitter. 5,008,957, Cl. 455-618.000.

Klaerner, Peter: *See*—
Bueschl, Rainer; and Klaerner, Peter, 5,008,341, Cl. 525-216.000.

Klanne, Harald, to ISB Generalunternehmen fur Industriespezialbau. Device for the maintenance of large-capacity containers. 5,007,500, Cl. 182-38.000.

Klausener, Alexander; Kleefeld, Gerd; Berg, Dieter; Dutzmann, Stefan; and Hanbler, Gerd, to Bayer Aktiengesellschaft. Pesticidal pyridyl-substituted acrylic ester compounds. 5,008,275, Cl. 514-334.000.

Kleefeld, Gerd: *See*—
Klausener, Alexander; Kleefeld, Gerd; Berg, Dieter; Dutzmann, Stefan; and Hanbler, Gerd, 5,008,275, Cl. 514-334.000.

Klein, Erhard, to Karl Harms Handels-GmbH & Co. KG. Magnetic security system against theft and burglary and metallic sensor element suitable therefor. 5,008,649, Cl. 340-572.000.

Klein, Gerald B. Business card and card stock with lift-out panel and bonded edges. 5,007,191, Cl. 40-638.000.

Klein, Rolf M.; Poprawe, Reinhart; and Herziger, Gerd W., to Blendax GmbH. Process for rounding bristle tips on brushes. 5,007,686, Cl. 300-21.000.

Kleinberg, Larry K., to Storz Instrument Company. Documentation illumination module for a microscope system. 5,007,723, Cl. 350-508.000.

Kleiner, Hans-Jerg; Gersdorf, Joachim; and Bastian, Udo, to Hoechst Aktiengesellschaft. Novel 6-acyl-(6H)-dibenz[c,e][1,2]oxaphosphorin 6-oxides, their preparation and their use as photoinitiators. 5,008,426, Cl. 558-82.000.

Kleiner, Hans-Jerg: *See*—
Gerdau, Thomas; Kleiner, Hans-Jerg; Peuckert, Marcellus; Bruck, Martin; and Aldinger, Fritz, 5,008,423, Cl. 556-412.000.

Kleinschmit, Peter: *See*—
Speer, Dietrich; Kiss, Akos; Kleinschmit, Peter; and Hanich, Juergen, 5,008,223, Cl. 106-450.000.

Kleinschnitz, Donald: *See*—
Fries, William J.; Kleinschnitz, Donald; and Nelson, T. Craig, 5,008,808, Cl. 364-200.000.

Klemann, Lawrence P.; Finley, John W.; and Scimone, Anthony, to Nabisco Brands, Inc. Long chain diol diesters as low calorie fat mimetics. 5,008,126, Cl. 426-611.000.

Klimisch, Helen M.; and Malczewski, Regina M., to Dow Corning Corporation. Sunscreen formulation containing a phenyl functional organosilicon compound. 5,008,101, Cl. 424-59.000.

Klingert, Bernd: *See*—
Husler, Rinaldo; Klingert, Bernd; Rembold, Manfred; and Steiner, Eginhard, 5,008,302, Cl. 522-14.000.

Klingman, Ken A.: *See*—
Nyberg, Eric D.; Klingman, Ken A.; Curtis, Jeff; and Stewart, Ray F., 5,007,989, Cl. 204-1.110.

Klinkowstein, Robert W., to Science Research Laboratory, Inc. High voltage power supply. 5,008,800, Cl. 363-61.000.

Klitsner, Daniel B., to Discovery Toys, Inc. Banked hairpin marble race toy. 5,007,876, Cl. 446-168.000.

Klopping, Peter A. Process for calibration of standardization of natural intestines. 5,007,878, Cl. 452-198.000.

Klos, Gene J.: *See*—
Ach, William D.; Anderson, Edmund J.; Behrends, Lynn B.; Desrude, Wayne P.; and Klos, Gene J., 5,007,527, Cl. 198-803.010.

Kmentt, Bradley A. Orthodontic appliance adhesive. 5,008,304, Cl. 523-118.000.

Knapp, Gordon G.: *See*—
Nalepa, Christopher J.; Presswood, J. Kenneth; and Knapp, Gordon G., 5,008,453, Cl. 564-271.000.

Knapp, Theodore L.: *See*—
Kennan, Linda D.; Knapp, Theodore L.; Monroe, Carl M.; and Skostins, Olgerts, 5,008,305, Cl. 523-212.000.

Knierim, David L.; and Brown, Gary L., to Tektronix, Inc. Method and apparatus for processing component signals to preserve high frequency intensity information. 5,008,741, Cl. 358-32.000.

Knobbe, Karl-Heinz: *See*—
Martinen, Hinrich; Knobbe, Karl-Heinz; Simonsson, Samuel S.; and Wirth, Peter, 5,008,896, Cl. 372-83.000.

Knoll, Jozsef: *See*—
Ecsery, Zoltan; Knoll, Jozsef; Somfai, Eva; Torok, Zoltan; Szinyei, Eva; and Mozsolits, Karoly, 5,008,292, Cl. 514-654.000.

Ko, Wei C. Ornamental clock with decorative time indicating device. 5,008,867, Cl. 368-23.000.

Kobayashi, Atsuhito: *See*—
Ono, Shoichi; and Kobayashi, Atsuhito, 5,008,531, Cl. 250-222.100.
Ono, Shoichi; and Kobayashi, Atsuhito, 5,008,532, Cl. 250-222.100.

Kobayashi, Eiji: *See*—
Kanda, Yutaka; Yasuzawa, Tohru; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; and Morimoto, Makoto, 5,008,271, Cl. 514-292.000.

Kobayashi, Hitoshi; Takano, Akira; Narusawa, Naoharu; Tsukada, Yukihiko; Sakamoto, Hiroshi; Hirano, Masaki; and Ando, Masao, to Nisshinbo Industries, Inc.; and Nagano Japan Radio Co., Ltd. Paper feeder of a label printer. 5,008,710, Cl. 355-202.000.

Kobayashi, Nobutoshi; and Murakami, Tetsuo, to Nippon Scientific Co., Ltd.; and Kusumoto Chemicals Co., Ltd. Vacuum drier apparatus. 5,007,183, Cl. 34-92.000.

Kobayashi, Ryuji: *See*—
Murata, Shizuo; Nakayama, Minoru; Furukawa, Kenji; and Kobayashi, Ryuji, 5,008,456, Cl. 564-322.000.

Kobayashi, Shoei: *See*—
Ohki, Hiroshi; Kobayashi, Shoei; and Wada, Takuya, 5,008,521, Cl. 235-454.000.

Kobayashi, Takehiro: *See*—
Emura, Masaharu; and Kobayashi, Takehiro, 5,007,601, Cl. 242-223.000.

Kobes, Gerald W.; and Eisele, Thomas A., to Tree Top, Inc. Apparatus for making enzyme inactivated viscous fruit pulp and products therefrom. 5,007,334, Cl. 99-483.000.

Koch, Ralph E., to Ralph E. Koch Trucking, Inc. Cover system for flat bed vehicles. 5,007,672, Cl. 296-100.000.

Kochba, Joseph: *See*—
Katzir, Yigal; and Kochba, Joseph, 5,008,743, Cl. 358-101.000.

Koehler Bertrand; Manil, Emmanuel; and Chapellier, Jacques, to Societe Nationale Industrielle et Aerospatiale. Device for controlling vibration-free movement of an optical element in a stellar inteferometer and stellar interferometer comprising same. 5,008,606, Cl. 318-649.000.

Koehler, Hermann; Ebel, Klaus; Karn, Helmut; and Taubitz, Christof, to BASF Aktiengesellschaft. Preparation of p-nitrophenylimidazoles. 5,008,398, Cl. 548-342.000.

Koflach Sport Gesellschaft mbH & Co. KG: *See*—
Bischof, Horst; and Skerbinjek, Wolfgang, 5,007,186, Cl. 36-121.000.

Koga, Yasuo: *See*—
Nishi, Takao; Uno, Tetsuyuki; Koga, Yasuo; and Chu, Gil-Namg, 5,008,274, Cl. 514-312.000.

Kogita, Hidekazu: *See*—
Mori, Keiji; and Kogita, Hidekazu, 5,007,722, Cl. 350-382.000.

Kohler, Hans-Dieter: *See*—
Schleppinghoff, Bernhard; Kohler, Hans-Dieter; Gabel, Christian; and Scheef, Hans-Volker, 5,008,466, Cl. 568-697.000.

Kohno, Mitsuru: *See*—
Takahashi, Teruyuki; and Kohno, Mitsuru, 5,008,308, Cl. 523-406.000.

Kohtaka, Ikuo: *See*—
Ishida, Tetsuyoshi; Kawano, Shigeyoshi; Kohtaka, Ikuo; Yamada, Kojiro; Kaku, Hiroyuki; and Narita, Tsuneo, 5,007,240, Cl. 60-673.000.

Kohya, Hidehiko: *See*—
Yokoi, Koichi; Irinoda, Kazuhiko; Kohya, Hidehiko; Sato, Susumu; and Katori, Tatsuhiko, 5,008,419, Cl. 556-137.000.

Koito Manufacturing Co., Ltd.: *See*—
Nino, Naohi, 5,008,781, Cl. 362-61.000.

Koizumi, Makoto: *See*—
Nishiyama, Nobumasa; Saito, Makoto; Ouchi, Yasuhide; Katoh, Yasuhiro; Kamo, Yoshihisa; Koizumi, Makoto; Aoi, Hajime; Sato, Naoki; and Tsuchiya, Reijiro, 5,008,761, Cl. 360-45.000.

Koizumi, Norihiko; Tanioka, Hiroshi; Toyama, Noboru; Arahara, Kozo; and Yuasa, Toshiya, to Canon Kabushiki Kaisha. Image recording apparatus for transferring ink patterns formed by selective application of energy through electrodes of a recording head controllably biased against ink transported on a roller. 5,008,690, Cl. 346-140.00R.

Koizumi, Satoru, to Sharp Kabushiki Kaisha. Two stage reel mechanism for tape recorder. 5,007,600, Cl. 242-194.000.

Koizumi, Yoshihisa, to Isuzu Motors Limited. Brake system. 5,007,509, Cl. 188-271.000.

Kojima, Kunio: *See*—
Numata, Tomiyuki; Iwaki, Takashi; Kojima, Kunio; and DeGuchi, Toshihisa, 5,008,888, Cl. 372-29.000.

Kojima, Narihito: *See*—
Rokutanzono, Takashi; Ide, Yukio; Nagame, Hiroshi; Ohshima, Kohichi; Kojima, Narihito; and Nousho, Shinji, 5,008,172, Cl. 430-67.000.

Kokubo, Hiroyasu; Sekigawa, Fujio; Chiba, Tohru; and Onda, Yoshiro, to Shin-Etsu Chemical Co., Ltd. Method for preparing film coated pharmaceutical preparations and method for improving properties thereof. 5,008,113, Cl. 424-480.000.

Kolesar, Edward S., Jr., to United States of America, Air Force. Hybrid wafer scale microcircuit integration. 5,008,213, Cl. 437-51.000.

Koller, Robert D., Sr.: *See*—
Killgoar, Paul C., Jr.; Samus, Marsha A.; Koller, Robert D., Sr.; and Hemenway, Carl P., 5,008,324, Cl. 524-504.000.

Komada, Kenya: *See*—
Sakamoto, Koji; Tanzawa, Misao; Iwata, Nobuo; Murayama, Hisao; Takahashi, Susumu; and Komada, Kenya, 5,008,711, Cl. 355-206.000.

Komai, Takeshi; Matsuyama, Kazuo; and Honma, Isao, to Nippon Oil and Fats Co., Ltd. Organic peroxide having a polymerization-regulating ability. 5,008,353, Cl. 526-230.500.

Komase, Hiroshi: *See*—
Saito, Kazuharu; Matsukura, Hiroyasu; Komase, Hiroshi; Tsuneda, Haruhiro; Watanabe, Junji; Saito, Tadao; Doy, Toshiroh; and Matsunaga, Kazuo, 5,007,209, Cl. 51-283.00R.

Komatsu Zenoah Company: *See*—
Nomoto, Shigeki, 5,007,391, Cl. 123-182.000.

Komori, Yumiko: *See*—
Karakida, Kenichi; Yagi, Shigeru; Fukuda, Yuzuru; Nishikawa, Masayuki; Roh, Te N.; Takahashi, Noriyoshi; Ono, Masato; Yokoi, Masaki; and Komori, Yumiko, 5,008,170, Cl. 430-65.000.

Komuro, Toshio: *See*—
Shibata, Kazuo; and Komuro, Toshio, 5,008,567, Cl. 307-443.000.

Kondo, Hirosato; Taguchi, Masahiro; Inoue, Yoshimasa; and Sakamoto, Fumio, to Kanebo, Ltd. Quinolinecarboxylic acid derivatives. 5,008,389, Cl. 544-343.000.

Kondo, Hitoshi; Ohta, Eiichi; and Kimura, Yuji, to Ricoh Company, Ltd. Thin film two terminal element. 5,008,732, Cl. 357-71.000.

Kondo, Kazuo: *See*—
Bekki, Katsutoshi; Kondo, Kazuo; Shibata, Yoshimasa; and Niwa, Shigeo, 5,007,932, Cl. 623-18.000.

Kondo, Satoshi: *See*—
Tsukisaka, Ryogo; Kondo, Satoshi; Kaneguchi, Toshio; and Deguchi, Takashi, 5,007,964, Cl. 106-464.000.

Kondo, Tetsuya; and Kawai, Noboru, to Victor Company of Japan, Ltd. Information recording medium having a glass substrate. 5,008,176, Cl. 430-272.000.

Kondo, Yasuaki: *See*—
Kurono, Masayasu; Kondo, Yasuaki; Mitani, Takahiko; Baba, Yutaka; and Sawai, Kiichi, 5,008,416, Cl. 556-89.000.

Kondo, Yuu: *See*—
Tanuma, Chiaki; Itsumi, Kazuhiro; Iwase, Nobuo; Ono, Tomio; Kondo, Yuu; and Saito, Kazutaka, 5,008,582, Cl. 310-332.000.

Konishi, Nobutake: *See*—
Kawachi, Genshiro; Mimura, Akio; Konishi, Nobutake; Ono, Kikuo; and Suzuki, Takashi, 5,008,218, Cl. 437-201.000.

Konok nee Horvath, Eva: *See*—
Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponacz, Anna; Eifert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo ; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.

Koos, Gregory L.: *See*—
Carver, Gary E.; Koos, Gregory L.; and Michalski, John D., 5,007,741, Cl. 356-448.000.

Kopin Corporation: *See*—
van der Have, Leonard A., 5,008,723, Cl. 357-23.700.

Korenaga, Hiroki: *See*—
Yamamura, Takeshi; Endo, Seiji; Kawauchi, Kazuyuki; and Korenaga, Hiroki, 5,008,728, Cl. 357-45.000.

Korremann, Birgitte: *See*—
Fosbol, Peder; Ullum, Henrik; and Korremann, Birgitte, 5,008,375, Cl. 530-357.000.

Korte, Reinhard: *See*—
Hermsdorffer, Joachim; Galfe, Gunther; Lautenbacher, Stefan; Korte, Reinhard; Krause, Hans-Joachim; Krull, Frans; May, Arno; Oberdorfer, Dietmar; and Pluquett, Ulrich, 5,007,433, Cl. 128-742.000.

Kosal, Jeffrey A.; and Swihart, Terence J., to Dow Corning Corporation. Silicone primer compositions. 5,008,349, Cl. 525-477.000.

Koseki, Ryoji, to Amada Company, Limited. Laser punch press, and beam detection device for adjusting the laser beam path. 5,008,510, Cl. 219-121.700.

Koshi, Yutaka, to Fuji Xerox. Image information encoding/decoding device. 5,008,951, Cl. 382-56.000.

Koshinaka, Masao; Akiyama, Minoru; Tanaka, Hitoshi; and Tomoda, Toshimasa, to Mitsubishi Denki Kabushiki Kaisha. System for detecting minute particles on or above a substrate. 5,008,558, Cl. 250-563.000.

Koster, Wolfgang: *See*—
Behling, Rolf; and Koster, Wolfgang, 5,008,917, Cl. 378-140.000.

Kotobuki Seiyaku Co. Ltd.: *See*—
Tomiyama, Tsuyoshi; Tomiyama, Akira; Shirai, Tadashi; Wakabayashi, Shuuichi; Kawai, Tomoyuki; Ueyama, Naoto; and Sonegawa, Motoharu, 5,008,282, Cl. 514-393.000.

Koudounaris, Angelo: *See*—
Congleton, Helen; Slaton, Carol L.; Koudounaris, Angelo; Smith, Gerald B.; and Soto, Vicente, 5,007,576, Cl. 228-103.000.

Kousaka, Kunimitsu: *See*—
Miida, Takashi; Ozaki, Nozomu; Baba, Shigenori; and Kousaka, Kunimitsu, 5,008,696, Cl. 354-408.000.

Kovesh, Yair: *See*—
Maier, Eliahu; Kovesh, Yair; and Zorea, Abraham, 5,007,248, Cl. 62-244.000.

Kowalczyk, Michael S.: *See*—
DeCecca, Michael L.; Kowalczyk, Michael S.; Gray, Thomas W.; and Partridge, Paul W., 5,008,538, Cl. 250-324.000.

Koyama, Junichi: *See*—
Aoyama, Motoo; Koyama, Junichi; Uchikawa, Sadao; Bessho, Yasunori; Ozawa, Michihiro; Nakamura, Mitsunari; Nakajima, Akinobu; and Maruyama, Hiromi, 5,008,070, Cl. 376-419.000.

Koyo Seiko Co., Ltd.: *See*—
Hattori, Tsuneichi; and Iga, Kazuo, 5,007,514, Cl. 192-45.000.
Takeuchi, Masamichi; and Asai, Yasuo, 5,007,747, Cl. 384-450.000.

Kozlowski, Walter A.: *See*—
Dewire, Robert J.; and Kozlowski, Walter A., 5,007,178, Cl. 33-767.000.

Kraft General Foods, Inc.: *See*—
Cale, Kenneth W.; Imura, Naoto; Jasovsky, George A.; and Katz, Saul N., 5,008,125, Cl. 426-594.000.

Krageloh, Konrad: *See*—
Meier, Josef; Deinhammer, Wolfgang; and Krageloh, Konrad, 5,008,392, Cl. 546-250.000.

Kragl, Udo: *See*—
Neidermeyer, Uwe; Kragl, Udo; Kula, Maria R.; Wandrey, Christian; Makrylaleas, Kyriakos; and Drauz, Karlheinz, 5,008,192, Cl. 435-128.000.

Kratky, Zdenek; and Tandy, John S., to Nestec S.A. Selective cleavage of naringin. 5,008,381, Cl. 536-8.000.

Krause, Frank: *See*—
Reutter, Jorg; and Krause, Frank, 5,008,524, Cl. 250-214.00A.

Krause, Hans-Joachim: *See*—
Hermsdorffer, Joachim; Galfe, Gunther; Lautenbacher, Stefan; Korte, Reinhard; Krause, Hans-Joachim; Krull, Frans; May, Arno; Oberdorfer, Dietmar; and Pluquett, Ulrich, 5,007,433, Cl. 128-742.000.

Krauss, Richard C., to DowElanco. Process for the preparation of 5-amino-3-chlorosulfonyl-1,2,4-triazole. 5,008,396, Cl. 548-263.800.

Krawiecki, Madonna M.: *See*—
Pesheck, Peter S.; Atwell, William A.; Krawiecki, Madonna M.; and Anderson, George R., 5,008,507, Cl. 219-10.55E.

Kreinberg, Earl R.: *See*—
Daly, John K.; Kreinberg, Earl R.; Puerner, Dean A.; and Adcock, Marty E., 5,007,858, Cl. 439-498.000.

Kremers, Henry T.; and Rabb, Khalid M., to Xerox Corporation. Selectable sheet offsetting. 5,007,625, Cl. 270-53.000.

Kresge, Charles T.: *See*—
Johnson, Ivy D.; Chu, Pochen; and Kresge, Charles T., 5,008,481, Cl. 585-418.000.

Krigmont, Henry V.; and Coe, Everett L., Jr., to Wahlco, Inc. Measurement of electrical resistivity of particulate entrained in a gas stream. 5,008,628, Cl. 324-693.000.

Krishnaswamy, Natrajan: *See*—
Zecchino, Julius R.; Krishnaswamy, Natrajan; Clement, Pamela A.; and Vargas, Anthony, 5,008,100, Cl. 424-59.000.

Krock, Friedrich W.: *See*—
Claussen, Uwe; and Krock, Friedrich W., 5,007,942, Cl. 8-506.000.

Kroener, Michael: *See*—
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Sendhoff, Norbert; and Freudenberg, Enrique, 5,008,321, Cl. 524-378.000.
Kroetsch, Edward S.: *See*—
Arndt, Horst; and Kroetsch, Edward S., 5,008,943, Cl. 381-68.600.
Kromer, Roland, to Maag Gear-Wheel & Machine Company Limited. Cutting or drawing tool. 5,007,774, Cl. 407-94.000.
Kruck, Richard W.; Cur, Omer N.; Leclear, Douglas D.; Kuehl, Steven J.; and Burin, Ralph R., to Whirlpool Corporation. Modular mechanical refrigeration unit. 5,007,246, Cl. 62-131.000.
Krueger, Steven D.; and Amundsen, Michael J., to Texas Instruments Incorporated. Data processing apparatus with abbreviated jump field. 5,008,807, Cl. 364-200.000.
Kruger, Bernd-Wieland; Sasse, Klaus; Hoever, Franz-Peter; Nentwig, Gunther; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Agents for repelling insects and mites. 5,008,261, Cl. 514-212.000.
Krull, Frans: *See*—
Hermsdorffer, Joachim; Galfe, Gunther; Lautenbacher, Stefan; Korte, Reinhard; Krause, Hans-Joachim; Krull, Frans; May, Arno; Oberdorfer, Dietmar; and Pluquett, Ulrich, 5,007,433, Cl. 128-742.000.
Krupp Polysius AG: *See*—
Beltrop, Herbert, 5,008,922, Cl. 378-208.000.
Krushinski, Bert K.; Lawhon, Robert A.; Radecki, Francis A.; and Schwenninger, Ronald L., to PPG Industries, Inc. Compressed, wedged float glass bottom structure. 5,007,950, Cl. 65-182.500.
Kubacak, Johnny L.; and Byrd, Gary D. Roadside spray apparatus. 5,007,585, Cl. 239-176.000.
Kubo, Masashige: *See*—
Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji; Shimizu, Sadami; Sato, Masakatsu; and Tamabayashi, Hanzo, 5,008,469, Cl. 568-722.000.
Kubodera, Seiiti: *See*—
Tanaka, Mitsugu; and Kubodera, Seiiti, 5,008,232, Cl. 503-227.000.
Kubota Limited: *See*—
Ito, Ryoichi; Iwai, Koji; and Nishida, Tsuyoshi, 5,007,383, Cl. 123-41.490.
Kucera, Eugenia H.: *See*—
Smith, James L.; and Kucera, Eugenia H., 5,008,163, Cl. 429-40.000.
Kuchiki, Kiyotsuna: *See*—
Saotome, Yoshimi; Kuchiki, Kiyotsuna; and Hayashi, Norihiko, 5,007,544, Cl. 212-265.000.
Kudo, Takanori; and Ishihara, Heigo, to Hitachi, Ltd. Process for producing information recording medium. 5,008,128, Cl. 427-130.000.
Kuehl, Steven J.: *See*—
Kruck, Richard W.; Cur, Omer N.; Leclear, Douglas D.; Kuehl, Steven J.; and Burin, Ralph R., 5,007,246, Cl. 62-131.000.
Kula, Maria R.: *See*—
Neidermeyer, Uwe; Kragl, Udo; Kula, Maria R.; Wandrey, Christian; Makrylaleas, Kyriakos; and Drauz, Karlheinz, 5,008,192, Cl. 435-128.000.
Kumada, Akio; Iochi, Takahiko; and Okada, Minoru, to Hitachi Maxell, Ltd.; and Demix Technology Inc. Piezoelectric revolving resonator and single-phase ultrasonic motor. 5,008,581, Cl. 310-323.000.
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Brandstrom, Arne E.; Lindberg, Per L.; and Sunden, Gunnel E., 5,008,278, Cl. 514-338.000.

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Dulebohn, David H.; and Lindberg, Winston R., 5,007,913, Cl. 606-107.000.

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Densmore, Larry L.; and Lindner, Thomas A., 5,007,904, Cl. 604-228.000.

Linnane, Anthony W., to Mucan Diagnostics Pty. Ltd. Kit or system for detecting SIMA and/or LIMA antigens in physiological fluid. 5,008,184, Cl. 435-7.230.

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Nishino, Hoyoku; Iwasaki, Ryozo; Okabe, Akio; and Yogo, Yuki, 5,008,295, Cl. 514-766.000.

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Cullis, Pieter R.; Hope, Michael J.; and Bally, Marcel B., 5,008,050, Cl. 264-4.300.

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Stewart, Robert E.; and Fersht, Samuel N., 5,007,289, Cl. 73-510.000.

Liu, Kintoken H., to Scientific Design Company, Inc. Catalyst for oxidation of ethylene to ethylene oxide. 5,008,413, Cl. 549-534.000.

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Lloyd, Mervin R. J. Snow plow arrangement for moisture retention in a field. 5,007,187, Cl. 37-220.000.
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Cameron, Randy E.; and Clement, Sandra K., 5,008,041, Cl. 252-500.000.
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Bernacchi, Donald B.; Loewe, Robert J.; and Immel, Donna L., 5,008,121, Cl. 426-89.000.
Login, Robert B.: *See—*
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Duchon, Douglas, 5,008,528, Cl. 250-221.000.
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Sidebotham, Christopher G.; McNulty, Donald E.; and Lombardo, Alan M., 5,007,933, Cl. 623-20.000.
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Lonza Ltd.: *See—*
Meul, Thomas, 5,008,402, Cl. 548-544.000.
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Blackburn, Warren D., Jr.; and Loose, Leland D., 5,008,283, Cl. 514-414.000.
LoPiccolo, Donald V.: *See—*
Bengtson, Fred G.; and LoPiccolo, Donald V., 5,007,218, Cl. 52-204.000.
Lord Corporation: *See—*
Carlson, J. David, 5,007,513, Cl. 192-21.500.
Lordan & Co.: *See—*
Maier, Eliahu; Kovesh, Yair; and Zorea, Abraham, 5,007,248, Cl. 62-244.000.
L'Oreal: *See—*
de Laforcade, Vincent, 5,007,563, Cl. 222-145.000.
Grollier, Jean F.; and Dubief, Claude, 5,008,105, Cl. 424-70.000.
Vanlerberghe, Guy; Zysman, Alexandre; and Sebag, Henri, 5,008,406, Cl. 549-378.000.
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Schuetz, Franz; Brand, Siegbert; Wenderoth, Bernd; Sauter, Hubert; Ammermann, Eberhard; and Lorenz, Cisela, 5,008,438, Cl. 560-55.000.
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Gunther, Bernd-Rainer; Losch, Rainer; and Steiner, Klaus, 5,008,394, Cl. 548-121.000.
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Loughlin, Bernard T.: *See—*
Kelly, Robert G.; Loughlin, Bernard T.; and McCutcheon, William F., 5,007,943, Cl. 51-295.000.
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Christopher, Kenneth W., Jr.; Feigenbaum, Barry A.; Kim, Jin; and Love, Douglas C., 5,008,820, Cl. 364-200.000.
Lover, Myron J., to Block Drug Company, Inc. Metering dispenser. 5,007,556, Cl. 222-386.500.
Loverich, Gary F.; and Griffin, Barry A., to Nor'Eastern Trawl Systems, Inc. Spar bouy pen system. 5,007,376, Cl. 119-3.000.
Lovrecich, Mara L., to Vectorpharma International S.p.A. Pharmaceutical compositions with controlled release, and a method for their preparation. 5,008,114, Cl. 424-484.000.
Lowe, Thomas E. Cartridge operated entertainment system with removal deterrent device for preventing unauthorized use. 5,007,256, Cl. 70-14.000.
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Holden, Homer N.; and Loyer, Philip K., 5,007,839, Cl. 439-191.000.
Lubrizol Corporation, The: *See—*
Jolley, Scott T.; and Grava, Arturs, 5,008,028, Cl. 252-68.000.
Lubrizol Genetics, Inc.: *See—*
Rolfe, Barry G.; Shine, John; Scott, Kieran F.; and Hennecke, Hauke, 5,008,194, Cl. 435-172.300.
Lucas Industries: *See—*
Madeley, David R.; and Binet, Mark S., 5,008,561, Cl. 307-80.000.
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Hoffmann, Armin; Ludwig, Wolfgang; and Leibhard, Erich, 5,007,780, Cl. 411-82.000.
Lui, Andrew L.: *See—*
Kessel, William C.; Laclaire, John L.; Lui, Andrew L.; Locke, Michael H.; and Britt, Herbert I., 5,008,810, Cl. 364-200.000.
Luigi, Darbesio: *See—*
Nakayama, Kiyoshi; and Luigi, Darbesio, 5,008,603, Cl. 318-568.100.
Luijten, Ronald P.: *See—*
Ahmadi, Hamid; Beha, Johannes G.; Denzel, Wolfgang E.; Engbersen, Antonius P.; Luijten, Ronald P.; Murphy, Charles A.; and Port, Erich, 5,008,878, Cl. 370-60.000.
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Meinetsberger, Eike, 5,008,247, Cl. 514-23.000.
Lukacs, Laszlo : *See—*
Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponacz, Anna; Eifert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo ; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.
Luna, Carlos E.: *See—*
Edmondson, Sherburne M.; and Luna, Carlos E., 5,008,202, Cl. 436-18.000.
Lundin, Jan-Erik, to Saab Missiles Aktiebolag. Device for the selective detection of objects. 5,008,522, Cl. 250-203.600.
Lutisan, Eduard: *See—*
Brychta, Jaroslav; Lutisan, Eduard; and Jirkovsky, Vladimir, 5,007,394, Cl. 123-279.000.
Lynch, John J.: *See—*
Chinnaswamy, Kumar; Gagliardo, Michael A.; Goodwin, Paul M.; Lynch, John J.; and Tessari, James E., 5,008,886, Cl. 371-40.200.
Lyxell, Frans O. S.: *See—*
Gustavsson, Tord G.; Lyxell, Frans O. S.; and Silja, Karl T. I., 5,007,986, Cl. 162-281.000.
Maag Gear-Wheel & Machine Company Limited: *See—*
Kromer, Roland, 5,007,774, Cl. 407-94.000.
Maas, Henricus G. R.: *See—*
Appels, Johannes A.; and Maas, Henricus G. R., 5,008,209, Cl. 437-31.000.
Maathuis, Antonnis G.; Spielmann, Jurgen; Beer, Klaus; and Oare, Thomas R., to Goodyear Tire & Rubber Company, The. Method of making a belt overlay for pneumatic tires. 5,007,974, Cl. 156-117.000.
MacDonald, Peter: *See—*
Palladino, Gaetano; MacDonald, Peter; and Bigatti, Ettore, 5,008,380, Cl. 536-6.400.
MacDonald, Virginia N.: *See—*
Hanson, Charles M; and MacDonald, Virginia N., 5,008,657, Cl. 340-766.000.
Machida, Hisashi, to Nippon Seiko Kabushiki Kaisha. Toroidal-type infinitely variable transmission. 5,007,298, Cl. 74-200.000.
Machida, Yoshimasa: *See—*
Yamauchi, Hiroshi; Sugiyama, Isao; Saito, Isao; Nomoto, Seiichiro; Kamiya, Takashi; Machida, Yoshimasa; and Negi, Shigeto, 5,008,260, Cl. 514-202.000.
Mack, David H.: *See—*
Sninsky, John J.; Kwok, Shirley Y.; and Mack, David H., 5,008,182, Cl. 435-5.000.
MacKay, Colin A.: *See—*
Spletter, Phillip J.; and MacKay, Colin A., 5,008,512, Cl. 219-121.640.
Mackay, Munro: *See—*
Keijsper, Johannes J.; Mackay, Munro; and Post, Martin F. M., 5,008,094, Cl. 423-328.000.
MacLean, Donald L.: *See—*
Ramachandran, Ramakrishnan; MacLean, Donald L.; and Satchell, Donald P., Jr., 5,008,412, Cl. 549-523.000.
Ramachandran, Ramakrishnan; MacLean, Donald L.; Satchell, Donald P., Jr.; and Malik, Virginia A., 5,008,414, Cl. 549-538.000.
Macnak, Philip P.: *See—*
Davis, Walter L.; and Macnak, Philip P., 5,008,952, Cl. 455-12.000.
MacWatt, David M., to Aardvark Clear Mine Limited of Shevock Farm. Apparatus for clearing mines. 5,007,325, Cl. 89-1.130.
Madan, Herb S.: *See—*
Peterson, John C.; Chow, Edward; and Madan, Herb S., 5,008,882, Cl. 370-94.300.
Madan, Pradeep B.: *See—*
Coffen, David L.; Madan, Pradeep B.; and Schwartz, Alan, 5,008,411, Cl. 549-519.000.
Madeley, David R.; and Binet, Mark S., to Lucas Industries. Device depowering apparatus. 5,008,561, Cl. 307-80.000.
Madey, John M. J.: *See—*
Cutolo, Antonello; Solimeno, Salvatore; and Madey, John M. J., 5,007,717, Cl. 350-353.000.
Maeda, Junichi; Yanai, Tsuguo; Yamamoto, Kazuto; Kuriyama, Yuji; and Yamamoto, Haruo, to Casio Computer Co., Ltd. Pocket size data

storage apparatus with tablet device for inputting image data. 5,008,854, Cl. 364-900.000.

Maeno, Yosimi: *See—*
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Kurosawa, Soichi; Iijima, Katsumi; Iizuka, Nobuyuki; Maeno, Yosimi; Takahashi, Shintaro; Watanabe, Yasuo; and Hiraga, Ryo, 5,008,072, Cl. 420-69.000.

Maeshima, Katsuyoshi: *See—*
Inuzuka, Tsuneki; Maeshima, Katsuyoshi; and Tomosada, Masahiro, 5,008,712, Cl. 355-206.000.

Mag Instrument, Inc.: *See—*
Maglica, Anthony; Johnson, Ralph E.; and Lewis, Armis L., 5,008,785, Cl. 362-183.000.

Magistro, Angelo J., to B. F. Goodrich Company, The. Catalytic dehydrohalogenation catalyst. 5,008,225, Cl. 502-73.000.

Maglica, Anthony; Johnson, Ralph E.; and Lewis, Armis L., to Mag Instrument, Inc. Rechargeable miniature flashlight. 5,008,785, Cl. 362-183.000.

Magorien, Robert M. Detachable two-piece temple. 5,007,728, Cl. 351-118.000.

Mahaney, John C., to Olson Manufacturing Co. Box lock assembly. 5,007,258, Cl. 70-159.000.

Maher, Ambrose P.: *See—*
Matteucci, Lawrence A.; Rager, Shirley J.; and Maher, Ambrose P., 5,007,367, Cl. 116-210.000.

Mahoney, Murray W.; and Ghosh, Amit K., to Rockwell International. Optical monitor for superplastic forming. 5,007,265, Cl. 72-37.000.

Maier, Eliahu; Kovesh, Yair; and Zorea, Abraham, to Lordan & Co. Beverage cooling system. 5,007,248, Cl. 62-244.000.

Maier, Hansueli: *See—*
Busenhart, Peter; Schneeberger, Ruedi; Holbein, Erwin; Wirz, Armin; Flueli, Adolf; and Maier, Hansueli, 5,007,595, Cl. 242-46.400.

Maier, William H.; and Bentham, Martin F., to UOP. Aromatics extraction process having improved water stripper. 5,008,004, Cl. 208-321.000.

Mainster, Martin A.: *See—*
Erickson, Phillip J.; Crossman, Janet L.; Heacock, Gregory L.; and Mainster, Martin A., 5,007,729, Cl. 351-219.000.

Maiocchi, Luigi, to Pirelli Coordinamento Pneumatici S.p.A. Beads of pneumatic tires for vehicle wheels. 5,007,471, Cl. 152-540.000.

Maitan, Gianni: *See—*
Corain, Luciano; Maitan, Gianni; Perlini, Renato; and Bacchetti, Mario, 5,007,463, Cl. 139-448.000.

Makimoto, Mitsuo: *See—*
Ohba, Motoi; Yabuki, Hiroyuki; and Makimoto, Mitsuo, 5,008,629, Cl. 328-14.000.

Makino, Takayuki; Mukai, Nobuhiro; and Ige, Hitoshi, to Mitsubishi Rayon Company Ltd. Visible light ray-curable monomeric composition for fastening loose teeth. 5,008,300, Cl. 522-8.000.

Makrylaleas, Kyriakos: *See—*
Neidermeyer, Uwe; Kragl, Udo; Kula, Maria R.; Wandrey, Christian; Makrylaleas, Kyriakos; and Drauz, Karlheinz, 5,008,192, Cl. 435-128.000.

Malcolm, Robert G.; and Richardson, Thomas W. Solid-state transducer based dynamic fluid flow sensing system. 5,007,286, Cl. 73-181.000.

Malczewski, Regina M.: *See—*
Klimisch, Helen M.; and Malczewski, Regina M., 5,008,101, Cl. 424-59.000.

Malik, Virginia A.: *See—*
Ramachandran, Ramakrishnan; MacLean, Donald L.; Satchell, Donald P., Jr.; and Malik, Virginia A., 5,008,414, Cl. 549-538.000.

Malim, Michael H.: *See—*
Kingsman, Alan J.; Kingsman, Susan M.; Adams, Sally E.; Mellor, Elizabeth J. C.; and Malim, Michael H., 5,008,373, Cl. 530-350.000.

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Mallory, Inc.: *See—*
Bellis, Peter D.; and Nesselrode, Frederick, 5,007,806, Cl. 417-360.000.

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Wakatsuki, Yoshio; Okuyama, Toshiharu; Takeuchi, Hajime; Shimizu, Misao; and Shimizu, Giichiro, 5,008,665, Cl. 340-870.260.

MAN Roland Druckmaschinen AG: *See—*
Abendroth, Paul; Brandes, Harry; and Raab, Rudolf, 5,007,342, Cl. 101-420.000.

Manchak, Frank, Jr.; Manchak, Frank E., II; Manchak, Michael E.; and Manchak, Peter J., to Alternative Technologies for Waste, Inc. Method and apparatus for centrifugally casting hazardous waste. 5,008,045, Cl. 252-633.000.

Manchak, Frank E., II: *See—*
Manchak, Frank, Jr.; Manchak, Frank E., II; Manchak, Michael E.; and Manchak, Peter J., 5,008,045, Cl. 252-633.000.

Manchak, Michael E.: *See—*
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Manfre, Robert A. Rail mate. 5,007,612, Cl. 248-558.000.

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Manil, Emmanuel: *See—*
Koehler Bertrand; Manil, Emmanuel; and Chapellier, Jacques, 5,008,606, Cl. 318-649.000.

Mann, Robert N., to Mig Vac Inc. Joint in fume-extracting welding gun. 5,007,664, Cl. 285-330.000.

Mann, Samuel J., to Inverness Corporation. Ear piercing cartridge assembly. 5,007,918, Cl. 606-188.000.

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Unewisse, Heinz; and Foering, Herbert, 5,007,667, Cl. 285-382.200.

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Casu, Benito; Torri, Giangiacomo; Naggi, Annamaria; Mantovani, Marisa; Pescador, Rodolfo; Porta, Roberto; and Prino, Giuseppe, 5,008,253, Cl. 514-54.000.

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Manzoni, Stephane, to Societe Manzoni Bouchot. .Mechanism with torque-limiting device for controlling a rearview mirror. 5,007,725, Cl. 350-633.000.

Marable, Alger C.: *See—*
Rosnack, Ellen M.; Pray, Larry A.; Marable, Alger C.; and Zekert, Gerry C., 5,008,122, Cl. 426-417.000.

Marchese, Michael J.: *See—*
Fishman, Sam; and Marchese, Michael J., 5,007,182, Cl. 34-90.000.

Marcilly, Christian; Deves, Jean-Marie; and Raatz, Francis, to Institut Francais du Petrole. Cracking catalyst for hydrocarbon charges comprising an offretite, a zeolite and a matrix. 5,008,000, Cl. 208-120.000.

Marconi, Marco: *See—*
Calanchi, Massimo; Gentilini, Leonardo; and Marconi, Marco, 5,008,117, Cl. 424-494.000.

Marcus, Jerald J.; and Berninger, John F., to Parker Hannifin Corporation. Poppet diaphragm valve. 5,007,458, Cl. 137-625.500.

Marecki, Tadeusz: *See—*
Matsunaga, Douglas S.; Slabowski, Jan W.; and Marecki, Tadeusz, 5,007,272, Cl. 72-226.000.

Margiaria, Giorgio; and Brizio, Giuseppe, to Fiat Auto S.p.A. Method for press molding plastics articles, in particular thermoplastic, thermosetting and polyurethane polymeric articles. 5,008,063, Cl. 264-297.200.

Margosian, Gregg M.: *See—*
Fiebig, Carolyn A. B.; Fuqua, Mike R.; Gursahaney, Suresh K.; Margosian, Gregg M.; and Weiss, Mark H., 5,008,805, Cl. 364-184.000.

Marinangeli, Richard E.: *See—*
Joy, George C., III; Lester, George R.; and Marinangeli, Richard E., 5,008,090, Cl. 423-212.000.

Marion, DeLos E., deceased (by Marion, Martha M., heir), to Garber, John E., a part interest. Joint brace. 5,007,415, Cl. 128-80.00C.

Marion Laboratories, Inc.: *See—*
Palmer, James T., 5,008,433, Cl. 560-17.000.

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Markinson, Scott; Schuster, Michael; and Hogan, Thomas, to Apollo Computer, Inc. Apparatus for low skew system clock distribution and generation of 2X frequency clocks. 5,008,636, Cl. 331-2.000.

Marks, Cara: *See—*
Anderson, Stephen; Light, David R.; Marks, Cara; and Rastetter, William H., 5,008,193, Cl. 435-138.000.

Marks, Harvey: *See—*
Weiss, Lawrence D.; Caruthers, Douglas W.; Inatomi, Charles T.; Kawan, Joseph C.; Lee, Shan; Marks, Harvey; Meguerdijan, Sarkis A.; Parekh, Dilip J.; Samulon, Alfred S.; Takata, Melvin M.; Tucci, Morris L.; and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.

Marks, John D., to Hercules Incorporated. Rocket motor insulation and like made with thin tacky ribbon. 5,007,343, Cl. 102-290.000.

Markunas, Albert L.: *See—*
Defenbaugh, John F.; and Markunas, Albert L., 5,007,245, Cl. 62-117.000.

Markussen, Jan; Norris, Kjeld; and Langkjaer, Liselotte, to Novo Nordisk A/S. Novel insulin peptides. 5,008,241, Cl. 514-3.000.

Marr, Richard A.: *See—*
Morris, John B.; Lammers, Uve H. W.; and Marr, Richard A., 5,007,721, Cl. 350-486.000.

Marrone, Anthony J., II. Deflator. 5,007,449, Cl. 137-223.000.

Marsch, Wilhelm: *See—*
Wolfer, Dietrich; and Marsch, Wilhelm, 5,008,317, Cl. 524-262.000.

Marshall, Christopher B.: *See—*
Burgess, Ian A.; Dennis, Andrew M.; and Marshall, Christopher B., 5,008,849, Cl. 364-746.000.

Marshall, James W.; Gotchy, David; Uffelman, Bradley L.; Leimbach, Wendell B.; and Wilhelmi, Albert A., to Pacific Scientific Company. Encapsulated motor with precision bearing registration. 5,008,572, Cl. 310-45.000.

Marshall, Robert W.: *See—*
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von Hein, Eduard, 5,007,891, Cl. 493-444.000.
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Mason, Stanley I., Jr.; Fuller, Elizabeth L.; and Doty, Roy E. Kit for board games. 5,007,651, Cl. 273-256.000.
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Rha, ChoKyun; Pradipasena, Pasawadee; Nakamura, TetsuHisa; Easson, Donald D., Jr.; and Sinskey, Anthony J., 5,008,108, Cl. 424-401.000.
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Tomizawa, Atsushi; Inoue, Susumu; and Masui, Takeshi, 5,007,152, Cl. 29-116.200.
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Broughton, George L.; Breckenfeld, Paul W.; Mate, David W.; Nettles, James A.; and Rogers, Duane E., 5,007,393, Cl. 123-195.00R.
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Bernhardt, Douglas H.; Matheu, Guillermo R.; Crum, Spencer E.; and Adelmann, John T., 5,007,336, Cl. 99-487.000.
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Mathur, Ashish, to Network Equipment Technologies, Inc. Method and apparatus for updating system software for a plurality of data processing units in a communication network. 5,008,814, Cl. 364-200.000.
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Matsaki, Katsumi, to Canon Kabushiki Kaisha. Data processor capable of outputting codes representing displayed patterns. 5,008,809, Cl. 364-200.000.
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Kanai, Masahiro; Aoike, Tatsuyuki; Matsuda, Koichi; and Kawakami, Soichiro, 5,007,971, Cl. 136-258.000.
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Matsukura, Hiroyasu: *See*—
Saito, Kazuharu; Matsukura, Hiroyasu; Komase, Hiroshi; Tsuneda, Haruhiro; Watanabe, Junji; Saito, Tadao; Doy, Toshiroh; and Matsunaga, Kazuo, 5,007,209, Cl. 51-283.00R.
Matsumoto, Koji, to Hosiden Corporation. Power socket. 5,007,851, Cl. 439-188.000.
Matsumoto, Shusaku; Hatakawa, Yoshio; and Nakajima, Akihiko, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Process for purifying sucrose fatty acid esters. 5,008,387, Cl. 536-119.000.
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Matsuo, Sei, to Alps Electric Co., Ltd. Positioning apparatus for an automatic carrier system. 5,007,783, Cl. 414-222.000.
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Kitaura, Hiromu; Isobe, Mitsuo; Kawahara, Isao; Hirauchi, Yoshio; Ninomiya, Yuichi; Ohtsuka, Yoshimichi; and Izumi, Yoshinori, 5,008,753, Cl. 358-171.000.
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Iida, Masanori; Hagiwara, Kiyokazu; Asakura, Hiroyuki; Nishioka, Minoru; and Murase, Koichi, 5,007,709, Cl. 350-162.220.
Ishibashi, Hiromichi; and Tanaka, Shinichi, 5,008,669, Cl. 341-102.000.
Katsura, Joji; Takagi, Yoshiyuki; and Watari, Shigeru, 5,008,727, Cl. 357-40.000.
Kenmoti, Kazuei; and Miyazaki, Masamitu, 5,007,947, Cl. 65-3.430.
Morita, Yoshio, 5,008,891, Cl. 372-45.000.
Ogawa, Kazufumi, 5,008,127, Cl. 427-36.000.
Ohba, Motoi; Yabuki, Hiroyuki; and Makimoto, Mitsuo, 5,008,629, Cl. 328-14.000.
Tomoda, Haruhisa; and Shimada, Yasuomi, 5,008,872, Cl. 369-32.000.
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Matteucci, Lawrence A.; Rager, Shirley J.; and Maher, Ambrose P. Inflatable balloon distress signal device. 5,007,367, Cl. 116-210.000.
Matthews, Thomas E.; and Touton, Charles P., to Kawneer Company, Inc. Snap-in glazing pocket filler. 5,007,221, Cl. 52-464.000.
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Matjasic, Klaus, 5,007,294, Cl. 73-862.410.
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Hermsdorffer, Joachim; Galfe, Gunther; Lautenbacher, Stefan; Korte, Reinhard; Krause, Hans-Joachim; Krull, Frans; May, Arno; Oberdorfer, Dietmar; and Pluquett, Ulrich, 5,007,433, Cl. 128-742.000.
Mayama, Tatsushige, to NT Incorporated. Scissors for both right and left hand use. 5,007,170, Cl. 30-232.000.
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Mayotte, Leo G.; and Eleazer, Prince B., to Air Products and Chemicals, Inc. Dust recycling to rotary kilns. 5,007,823, Cl. 432-14.000.
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Rose, Howard; and McAffer, Ian G. C., 5,007,546, Cl. 215-32.000.

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Taylor, Tim C.; and McAllister, John A., 5,007,730, Cl. 351-243.000.

McCartney, Ronald L., to Baxter International Inc. Oximeter. 5,007,704, Cl. 350-96.210.

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McClusky, Stanley; and Boyd, Jerry L., 5,007,227, Cl. 53-243.000.

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Ketcham, Stephen O.; Ortiz, Paul W.; Jarvis, Jamie S.; and McCray, Clyde S., 5,007,316, Cl. 83-167.000.

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Kelly, Robert G.; Loughlin, Bernard T.; and McCutcheon, William F., 5,007,943, Cl. 51-295.000.

McDonnell Douglas Corporation: *See*—
Green, Samuel I., 5,008,526, Cl. 250-214.00R.

McDougall, Floyd H.: *See*—
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McEathron, Robert J. Hydraulic lift for bathtubs. 5,007,121, Cl. 4-566.000.

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McElroy, John W., to Liberty Technology Center, Inc. Non-invasive system and method for inspection of valves. 5,008,841, Cl. 364-551.010.

McEwen, William D. Support stand for food pouches. 5,007,606, Cl. 248-152.000.

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McGill Manufacturing Company, Inc.: *See*—
Stuhlmacher, John A., 5,008,503, Cl. 200-308.000.

McGuire, Douglas K. Hoof-buffing tool kit for farriers. 5,007,483, Cl. 168-48.100.

McGuire, Michael A.: *See*—
Bender, Paul E.; Lantos, Ivan; McGuire, Michael A.; Pridgen, Lendon N.; and Winicov, Herbert B., 5,008,390, Cl. 546-199.000.

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Olsen, Steven A.; Cronin, William J.; Jarvis, Ben L.; and McMillan, Jeff G., 5,008,929, Cl. 379-112.000.

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McNulty, Donald E.: *See*—
Sidebotham, Christopher G.; McNulty, Donald E.; and Lombardo, Alan M., 5,007,933, Cl. 623-20.000.

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Doyle, A. Thomas; Tremulis, William S.; and McQueen, Colleen L., 5,007,434, Cl. 128-772.000.

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Liang, Rong-Chang; Kintz, Karl A.; O'Connor, Joseph G.; and Adair, Paul C., 5,008,237, Cl. 503-212.000.

Meadows, John: *See*—
Blau, David A.; Meadows, John; Sherlock, Thomas M.; Stengel, Fred; Studholme, Robert M.; Wada, Kenneth R.; and Kepner, Christopher J., 5,008,081, Cl. 422-64.000.

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Bernhardt, Douglas H.; Matheu, Guillermo R.; Crum, Spencer E.; and Adelmann, John T., 5,007,336, Cl. 99-487.000.

Meddaugh, Michael D., to Dow Corning Corporation. Composition and method for priming and coating silicone substrates. 5,008,154, Cl. 428-447.000.

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Quaid, Joel, 5,007,929, Cl. 623-8.000.

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Doan, Phong D.; Upton, James E.; Hess, Douglas N.; Bass, Wayne R.; and Ufford, Keith A., 5,007,435, Cl. 128-784.000.
Smits, Karel F. A. A., 5,007,436, Cl. 128-786.000.

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Weiss, Lawrence D.; Caruthers, Douglas W.; Inatomi, Charles T.; Kawan, Joseph C.; Lee, Shan; Marks, Harvey; Meguerdijan, Sarkis A.; Parekh, Dilip J.; Samulon, Alfred S.; Takata, Melvin M.; Tucci, Morris L.; and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.

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Nishiuchi, Shohachi; Ohta, Shigeo; Imai, Hitoshi; and Meguro, Haruo, 5,007,266, Cl. 72-44.000.

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Lehmkuhl, Herbert; and Mehler, Klaus-Dieter, 5,007,991, Cl. 204-58.500.

Meidan, Daniel. Plastic profile fastener. 5,007,146, Cl. 24-683.000.

Meier, Hans R.; Evans, Samuel; and Dubs, Paul, to Ciba-Geigy Corporation. Substituted phenols as stabilizers. 5,008,459, Cl. 568-46.000.

Meier, Josef; Deinhammer, Wolfgang; and Krageloh, Konrad, to Wacker-Chemie GmbH. Process for the preparation of pyridine-2,3-dicarboxylic acid esters. 5,008,392, Cl. 546-250.000.

Meier, Louis M.; and Berning, Lloyd G., to Flexsteel Industries, Inc. Fluid-resistant, upholstered furniture seat adapted to aid housekeeping. 5,007,681, Cl. 297-440.000.

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Tachibana, Shunro; and Shibata, Uichi, 5,007,438, Cl. 128-798.000.

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Mellard, David. Automobile anti-theft device. 5,007,259, Cl. 70-209.000.

Meller, Moshe; and Feldman, Michael, to MTI Precision Products, Inc. Disposable right angle dental handpiece. 5,007,832, Cl. 433-126.000.

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Kingsman, Alan J.; Kingsman, Susan M.; Adams, Sally E.; Mellor, Elizabeth J. C.; and Malim, Michael H., 5,008,373, Cl. 530-350.000.

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Morey, William W.; Leonberger, Fred J.; Glenn, William H.; and Meltz, Gerald, 5,007,705, Cl. 350-96.290.

Menicon Co., Ltd.: *See*—
Yamamoto, Yasuyoshi; Kaga, Yuzo; Yoshikawa, Toshiharu; and Moribe, Akira, 5,007,975, Cl. 156-154.000.

Merck & Co., Inc.: *See*—
Chaiet, Louis; Zimmerman, Sheldon B.; Monaghan, Richard L.; and Garrity, George M., 5,008,187, Cl. 435-72.000.
Fisher, Michael H.; Wyvratt, Matthew J.; and Mrozik, Helmut, 5,008,250, Cl. 514-30.000.

Mercurio, Leonard, to Set-O-Matic Sales Corp. Coin drop construction. 5,007,519, Cl. 194-230.000.

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Fischer, Rolf; Frank, Juergen; Merger, Franz; and Weyer, Hans-Juergen, 5,008,408, Cl. 549-429.000.

Merianos, John J.; and Login, Robert B., to GAF Chemicals Corporation. Solubilization of lactam and chlorhexidine in water. 5,008,038, Cl. 252-363.500.

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Merkel, Paul B.; and Hoke, David, to Eastman Kodak Company. Photographic recording material containing a cyan dye-forming coupler. 5,008,180, Cl. 430-552.000.

Merrison, John C.: *See*—
Unsworth, Peter J.; Merrison, John C.; and Rowan, Timothy M., 5,008,608, Cl. 318-729.000.

Merritt, Arch J., deceased: *See*—
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Merritt, Helene, executrix: *See*—
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Merritt, Michael A.: *See*—
Naro, Rodney L.; Csonka, James M.; and Merritt, Michael A., 5,008,074, Cl. 420-578.000.

Merry, Richard P., to Minnesota Mining and Manufacturing Company. Erosion resistant mounting composite for catalytic converter. 5,008,086, Cl. 422-180.000.

Mersch, Steven H., to Becton, Dickinson and Company. Measuring a gap between a tube and a float. 5,008,556, Cl. 250-560.000.

Mery, Bernard: *See*—
Penitot, Gerard; Cartigny, Marcel; Roynard, Joel; Valdenaire, Bruno; Astier, Marc; Mery, Bernard; and Wendling, Michael, 5,007,447, Cl. 137-102.000.

Meseke, Curt T.; Winkler, Winfried; and Hilbig, Renate, to Hammerlit GmbH. Syringe tray. 5,007,535, Cl. 206-366.000.

Messick, Mikel J.: *See*—
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Metcal, Inc.: *See—*
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Metz, Josef: *See—*
Kaufhold, Manfred; and Metz, Josef, 5,008,429, Cl. 558-374.000.

Metzger, Herbert: *See—*
Rothfuss, Hans; Bruckner, Raimund; Keutgen, Peter; Seeger, Josef; Winkelmann, Manfred; and Metzger, Herbert, 5,007,621, Cl. 266-220.000.

Meul, Thomas, to Lonza Ltd. Process for production of 5-alkyl tetramic acids. 5,008,402, Cl. 548-544.000.

Meyer, Edwin R.: *See—*
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Ditrich, Klaus; Hamprecht, Gerhard; Wuerzer, Bruno; Meyer, Norbert; Westphalen, Karl-Otto; and Laatsch, Hartmut, 5,007,954, Cl. 71-90.000.

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Meyers, Paul A.: *See—*
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Miall, Derek L. Cylinder head straightener. 5,007,279, Cl. 72-394.000.

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Haluska, Loren A.; Michael, Keith W.; and Tarhay, Leo, 5,008,320, Cl. 524-361.000.

Michael Weinig Aktiengesellschaft: *See—*
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Michalski, John D.: *See—*
Carver, Gary E.; Koos, Gregory L.; and Michalski, John D., 5,007,741, Cl. 356-448.000.

Michaluk, Peter G.: *See—*
Lloyd, David D.; and Michaluk, Peter G., 5,008,014, Cl. 210-512.100.

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Pratt, William C.; and McKillip, William D., 5,008,821, Cl. 364-413.010.

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Spletter, Phillip J.; and MacKay, Colin A., 5,008,512, Cl. 219-121.640.

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Look, David C.; Sewell, James S.; Mier, Millard G.; Sizelove, John R.; Walters, Dennis C.; and Dudley, Scott C., 5,008,542, Cl. 250-341.000.

Mig Vac Inc.: *See—*
Mann, Robert N., 5,007,664, Cl. 285-330.000.

Mignani, Serge: *See—*
Gueremy, Claude; Jimonet, Patrick; and Mignani, Serge, 5,008,280, Cl. 514-367.000.

Miida, Takashi; Ozaki, Nozomu; Baba, Shigenori; and Kousaka, Kunimitsu, to Fuji Photo Film Co., Ltd. Phase difference detecting apparatus. 5,008,696, Cl. 354-408.000.

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Mikesell, James R.: *See—*
Treatch, James E.; and Mikesell, James R., 5,007,429, Cl. 128-677.000.

Mikros U.S.A., Inc.: *See—*
Bender, Kelly M., 5,007,417, Cl. 128-80.00H.

Milani, Francesco: *See—*
Bayerlein, Jorg; Hecker, Eric; Hoeck, Peter; and Milani, Francesco, 5,007,688, Cl. 312-7.200.

Milbar Corporation: *See—*
Jeromson, James R., Jr.; and Anderson, J. Edward C., 5,007,313, Cl. 81-486.000.

Miles Inc.: *See—*
Kheiri, Mohammad A., 5,008,077, Cl. 422-56.000.

Miller, Jan D.; and Ye, Yi. Chemical conditioning of fine coal for improved flotation and pyrite rejection. 5,008,006, Cl. 209-167.000.

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Carmello, Robert; and Miller, Richard D., 5,008,029, Cl. 252-91.000.

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Quay, Steven C.; Rocklage, Scott M.; and Miller, Warren K., 5,008,099, Cl. 424-1.100.

Mills, Leo F.: *See—*
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Milwaukee Electric Tool Corporation: *See—*
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Kawachi, Genshiro; Mimura, Akio; Konishi, Nobutake; Ono, Kikuo; and Suzuki, Takashi, 5,008,218, Cl. 437-201.000.

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Tanaka, Toshiyuki; and Minami, Etsuji, 5,008,873, Cl. 369-44.140.

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Nonaka, Katusnobu; and Sekine, Kazuyoshi, 5,008,620, Cl. 324-213.000.

Ministry of International Trade and Industry: *See—*
Watanabe, Eiji; Horio, Nasakazu; and Suzuki, Kenzi, 5,008,224, Cl. 502-63.000.

Mink, Ronald: *See—*
Wang, Dou-Mei; Sturdivant, Linda D.; Biemer, Thomas A.; and Mink, Ronald, 5,008,199, Cl. 435-240.270.

Minnesota Mining and Manufacturing Company: *See—*
Bartizal, Dennis C.; and Campagna, Anthony J., 5,007,418, Cl. 128-90.000.
Englund, Richard L.; and Schwartz, Thomas W., 5,007,128, Cl. 15-230.160.
Merry, Richard P., 5,008,086, Cl. 422-180.000.
Wilson, Bruce B.; and Grunzinger, Raymond E., 5,008,142, Cl. 428-203.000.
Youngquist, Robert J., 5,008,765, Cl. 360-77.120.

Minnovation Limited: *See—*
Parrott, George A., 5,007,684, Cl. 299-81.000.

Minolta Camera Kabushiki Kaisha: *See—*
Enoguchi, Yuji; Natsuhara, Toshiya; and Yamamoto, Masashi, 5,008,708, Cl. 355-259.000.
Higashio, Kimihiko; and Kawabuchi, Yoichi, 5,008,714, Cl. 355-313.000.
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Matsuura, Kazuo, 5,007,692, Cl. 350-6.800.
Tominaga, Shinji; and Hashimoto, Takeshi, 5,008,699, Cl. 354-457.000.

Minoura, Jun; Takahahi, Shigeyuki; Kato, Hisaki; Ito, Toshiyasu; Mori, Takaaki; Kato, Mamoru; Shimada, Junichi; and Okabayashi, Katsuaki, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Toyoda Gosei Co., Ltd. Electrochromic elements and methods of manufacturing and driving the same. 5,007,718, Cl. 350-357.000.

Minowa, Kenji: *See—*
Tamaki, Kuniaki; Sakai, Norio; and Minowa, Kenji, 5,007,534, Cl. 206-329.000.

Minter, Mearl, to Rolscreen Company. Sunroom. 5,007,215, Cl. 52-90.000.

Minton, John P.; Webb, Thomas E.; and Abou-Issa, Hussein M., to Ohio State University Research Foundation. Method and composition for achieving chemotherapeutic activity. 5,008,291, Cl. 514-578.000.

Misholi, Boaz, to Efrat Future Technology Ltd. Message management system. 5,008,926, Cl. 379-89.000.

Mitani, Takahiko: *See—*
Kurono, Masayasu; Kondo, Yasuaki; Mitani, Takahiko; Baba, Yutaka; and Sawai, Kiichi, 5,008,416, Cl. 556-89.000.

Mitchell, Muni M.: *See—*
Edmond, John A.; Waltz, Douglas G.; Mitchell, Muni M.; Sedigh, Mohammad; and Hamerski, Roman, 5,008,735, Cl. 357-74.000.

Mitsubishi Denki K.K.: *See—*
Akasu, Masahira, 5,007,397, Cl. 123-422.000.
Itoh, Tatsuo; Ito, Hisayoshi; and Murasaki, Kiyomi, 5,008,802, Cl. 364-140.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Fukiage, Takahiko, 5,008,609, Cl. 323-313.000.
Kanoh, Kenji, 5,008,676, Cl. 341-154.000.
Kimura, Tadashi; Matsugi, Tetsuzo; and Suzuki, Yasuyuki, 5,007,809, Cl. 417-371.000.
Koshinaka, Masao; Akiyama, Minoru; Tanaka, Hitoshi; and Tomoda, Toshimasa, 5,008,558, Cl. 250-563.000.
Moriizumi. Koichi; and Fujino, Takeshi, 5,008,830, Cl. 364-490.000.
Suzuki, Shigehiko; and Tachino, Kenzo, 5,007,506, Cl. 187-101.000.
Tsutsumi, Michinari; Endo, Atsushi; and Yada, Toshio, 5,007,984, Cl. 156-656.000.
Uenishi, Akio, 5,008,720, Cl. 357-23.400.
Yoshitake, Kunitoshi, 5,008,864, Cl. 368-10.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Abe, Takafumi; Uchiyama, Seiji; Ojima, Takahiro; and Kida, Koichi, 5,008,479, Cl. 585-320.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Nakano, Takafumi; Seo, Akikazu; Soeda, Hiromitsu; and Sueoka, Kazufumi, 5,007,341, Cl. 101-349.000.

Mitsubishi Paper Mills Limited: *See—*
Ashida, Tetsuya; and Noda, Touru, 5,008,150, Cl. 428-340.000.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Sano, Hironari; and Ohno, Kenyu, 5,008,332, Cl. 525-92.000.

Mitsubishi Rayon Company, Ltd.: *See*—
Kishida, Kazuo; Kitai, Kiyokazu; and Mohri, Masaaki, 5,008,313, Cl. 524-120.000.
Makino, Takayuki; Mukai, Nobuhiro; and Ige, Hitoshi, 5,008,300, Cl. 522-8.000.
Mitsubishi Yuka Badische Co., Ltd.: *See*—
Abe, Tadashi; Aoki, Masahiro; Takahashi, Tsunenori; and Awata, Takeshi, 5,008,329, Cl. 524-798.000.
Mitsuboshi Belting Ltd.: *See*—
Masuda, Takashi; Hashimoto, Kengiro; Takagi, Shinichi; and Tanaka, Masayuki, 5,007,884, Cl. 474-242.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Ishimaru, Naoshi; Tsutsui, Toshiyuki; Toyota, Akinori; and Kashiwa, Norio, 5,008,356, Cl. 526-281.000.
Yamamoto, Ryoichi; and Suzuki, Hiroshi, 5,008,450, Cl. 562-485.000.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Katakami, Tsutomu; Yokoyama, Tatsuro; Miyamoto, Michihiko; Mori, Haruki; Kawauchi, Nobuya; Nobori, Tadahito; Sannohe, Kunio; Kamiya, Joji; Ishii, Masaaki; and Yoshihara, Kanji, 5,008,267, Cl. 514-269.000.
Miwa, Hiroshi: *See*—
Ishii, Keizou; Kuwajima, Teruaki; Miwa, Hiroshi; Kashihara, Akio; and Ishikura, Shinichi, 5,008,318, Cl. 524-284.000.
Miwon Co., Ltd.: *See*—
Lee, Sae Bae; Won, Chan H.; Park, Chung; and Lim, Bun S., 5,008,190, Cl. 435-108.000.
Miyagi, Ken: *See*—
Shimizu, Katsuichi; Shibata, Takehiko; Yokomizo, Yoshikazu; Suzuki, Akira; Murakami, Koichi; Yoshida, Tadashi; Tsukada, Masaharu; Nagashima, Nao; and Miyagi, Ken, 5,008,760, Cl. 358-451.000.
Miyake, Ryo: *See*—
Ohki, Hiroshi; Kamohara, Hideaki; and Miyake, Ryo, 5,007,732, Cl. 356-73.000.
Miyamae, Satoshi: *See*—
Mine, Katsutoshi; Morita, Yoshitsugu; and Miyamae, Satoshi, 5,008,733, Cl. 357-72.000.
Miyamoto, Michihiko: *See*—
Katakami, Tsutomu; Yokoyama, Tatsuro; Miyamoto, Michihiko; Mori, Haruki; Kawauchi, Nobuya; Nobori, Tadahito; Sannohe, Kunio; Kamiya, Joji; Ishii, Masaaki; and Yoshihara, Kanji, 5,008,267, Cl. 514-269.000.
Miyauchi, Fumio; and Mizuno, Shyuzi, to Ikeda Bussan Co., Ltd. Vehicular seat with seatback inclining mechanism. 5,007,680, Cl. 297-379.000.
Miyauchi, Hiroshi: *See*—
Kume, Toyohiko; Goto, Toshio; Kamochi, Atsumi; Yanagi, Akihiko; Miyauchi, Hiroshi; and Asami, Tadao, 5,007,952, Cl. 71-73.000.
Miyazaki, Hideki; Kanouda, Akihiko; Onda, Kenichi; and Matsuda, Yasuo, to Hitachi, Ltd. Solid state current sensing circuit and protection circuit. 5,008,586, Cl. 323-315.000.
Miyazaki, Masamitu: *See*—
Kenmoti, Kazuei; and Miyazaki, Masamitu, 5,007,947, Cl. 65-3.430.
Miyazaki, Nagao, to Japan Electronics Industry, Limited. Motor vehicle braking apparatus using accelerator pedal. 5,007,516, Cl. 192-0.072.
Miyazaki, Toshihiko: *See*—
Nishimura, Yukuo; Haruta, Masahiro; Munakata, Hirohide; Kuwae, Yoko; Miyazaki, Toshihiko; and Yuasa, Satoshi, 5,007,714, Cl. 350-353.000.
Mizelle, Ned W. Reclining chair. 5,007,679, Cl. 297-374.000.
Mizoguchi, Akane, to NEC Corporation. Semiconductor memory device provided with an improved system for detecting the positions using a redundant structure. 5,008,857, Cl. 365-200.000.
Mizoguchi, Hiroshi, to Kabushiki Kaisha Toshiba. Parallel accessible memory device. 5,008,852, Cl. 364-900.000.
Mizrahi, Yehuda: *See*—
Berkowitz, Yehuda; Hi, Gavriel M.; and Mizrahi, Yehuda, 5,007,453, Cl. 137-458.000.
Mizumoto, Takeshi; and Murakami, Yoshiaki, to Kabushiki Kaisha Kobe Seiko Sho. Belt transmission for very small size shovel car. 5,007,882, Cl. 474-84.000.
Mizuniwa, Seiji; Hattori, Akio; Kurihara, Tooru; Aoyama, Seigi; and Nakamura, Konichi, to Hitachi Cable Limited. Method of fabricating GaAs single crystal. 5,007,979, Cl. 156-605.000.
Mizuno, Hitoshi: *See*—
Torii, Nobutoshi; Mizuno, Hitoshi; and Muraki, Katsuyuki, 5,008,832, Cl. 364-513.000.
Mizuno, Shyuzi: *See*—
Miyauchi, Fumio; and Mizuno, Shyuzi, 5,007,680, Cl. 297-379.000.
Ozawa, Makoto; Hirama, Yasuo; and Mizuno, Shyuzi, 5,007,677, Cl. 297-284.000.
Mizuno, Tohru; and Ito, Takayuki, to Fanuc Ltd. Robot control apparatus. 5,008,834, Cl. 364-513.000.
MMTC, Inc.: *See*—
Sterzer, Fred, 5,007,437, Cl. 428-786.000.
Mobil Oil Corp.: *See*—
Chin, Arthur A., 5,007,999, Cl. 208-113.000.
Fremuth, Dietmar R. A.; Rogers, Alan E.; and Zahner, John C., 5,008,088, Cl. 422-234.000.
Garwood, William E.; Le, Quang N.; Shim, Joosup; and Wong, Stephen S., 5,008,460, Cl. 585-11.000.
Haag, Werner O.; and Lago, Rudolph M., 5,008,482, Cl. 585-437.000.
Hen, John, 5,008,025, Cl. 252-8.510.
Herrington, Fox J., 5,007,142, Cl. 24-400.000.
Herrington, Fox J., 5,007,143, Cl. 24-400.000.
Johnson, Ivy D.; Chu, Pochen; and Kresge, Charles T., 5,008,481, Cl. 585-418.000.
Mochizuki, Masashi: *See*—
Nakajima, Yuji; and Mochizuki, Masashi, 5,007,710, Cl. 350-166.000.
Mochizuki, Shigetoshi, to Satoru Yagi. Combination necklace. 5,007,252, Cl. 63-3.000.
Moharam, M. Gamal: *See*—
Gaylord, Thomas K.; Glytsis, Elias N.; Moharam, M. Gamal; and Baird, William E., 5,007,708, Cl. 350-162.200.
Mohri, Masaaki: *See*—
Kishida, Kazuo; Kitai, Kiyokazu; and Mohri, Masaaki, 5,008,313, Cl. 524-120.000.
Mold-Masters Limited: *See*—
Schmidt, Harald H., 5,007,821, Cl. 425-548.000.
Molex Incorporated: *See*—
Quinn, Robert L.; and Pansari, Frank, Jr., 5,007,280, Cl. 72-402.000.
Molteni, Roberto; and Zanmarchi, Giulio, to U.S. Philips Corporation. Dental X-ray image detection system. 5,008,547, Cl. 250-368.000.
Monaghan, Richard L.: *See*—
Chaiet, Louis; Zimmerman, Sheldon B.; Monaghan, Richard L.; and Garrity, George M., 5,008,187, Cl. 435-72.000.
Monarch Machine Tool Company, The: *See*—
Gusching, Nagle V., 5,007,151, Cl. 29-33.00J.
Monarch Marking Systems, Inc.: *See*—
Goubeaux, Donald E., 5,007,750, Cl. 400-249.000.
Mondori, Luciano: *See*—
Grespiatico, Giampietro; and Mondori, Luciano, 5,007,854, Cl. 439-367.000.
Mondt, Josef: *See*—
Engel, Dieter; Mondt, Josef; and Zimmerschied, Klaus, 5,008,155, Cl. 428-463.000.
Monroe Auto Equipment Company: *See*—
Guy, Yoram, 5,007,659, Cl. 280-707.000.
Monroe, Carl M.: *See*—
Kennan, Linda D.; Knapp, Theodore L.; Monroe, Carl M.; and Skostins, Olgerts, 5,008,305, Cl. 523-212.000.
Monsanto Company: *See*—
Connolly, Daniel T.; and Feder, Joseph, 5,008,196, Cl. 435-240.200.
Patel, Raman, 5,008,337, Cl. 525-130.000.
Montalvo, Antonio J. Back-to-back capacitor charge pumps. 5,008,799, Cl. 363-60.000.
Montgomery, Donald D.: *See*—
Anson, Fred C.; and Montgomery, Donald D., 5,008,339, Cl. 525-181.000.
Montgomery, John A.: *See*—
Secrist, John A., III; Montgomery, John A.; Ealick, Steve E.; Erion, Mark D.; and Guida, Wayne C., 5,008,265, Cl. 514-258.000.
Secrist, John A., III; Montgomery, John A.; Ealick, Steve E.; Erion, Mark D.; and Guida, Wayne C., 5,008,270, Cl. 514-258.000.
Monti, Sergio, to Onco-Pharm Development AG. Pharmaceutical compositions having antineoplastic activity. 5,008,287, Cl. 514-492.000.
Moody, Gillian M.; and Rushforth, Christine A., to Allied Colloids Limited. Recovery of alumina from bauxite. 5,008,089, Cl. 423-121.000.
Mookherjee, Braja D.; Trenkle, Robert W.; Calderone, Nicholas; and Fenn, Ronald S., to International Flavors & Fragrances Inc. Schiff base reaction product of ethyl vanillin and methyl anthranilate and organoleptic uses thereof. 5,008,437, Cl. 560-35.000.
Moore, Boyd B., to Shell Oil Company. Method for forming precision liquid/vapor separated bristle assembly. 5,007,277, Cl. 72-379.200.
Moore, D. Roger: *See*—
Evers, Robert C.; Dang, Thuy D.; and Moore, D. Roger, 5,008,346, Cl. 525-426.000.
Moore, William E., to Eastman Kodak Company. Quantitative imaging employing scanning equalization radiography. 5,008,914, Cl. 378-108.000.
Moran, John. Apparatus for producing address labels. 5,007,663, Cl. 283-81.000.
More, Henry S.; Fraser, Edward C.; and Bulduc, Lawrence R., to Quantum Solutions, Inc. Apparatus for inductively coupling signals between a downhole sensor and the surface. 5,008,664, Cl. 340-854.000.
Morefield, Allen J. Conveyor belt scraper mechanisms. 5,007,523, Cl. 198-497.000.
Morefield, Allen J. Apparatus and method for safely actuating a belt scraper mechanism with pressurized water. 5,007,524, Cl. 198-499.000.
♦Morey, William W.; Leonberger, Fred J.; Glenn, William H.; and Meltz, Gerald, to United Technologies Corporation. Variable optical fiber Bragg filter arrangement. 5,007,705, Cl. 350-96.290.
Mori, Haruki: *See*—
Katakami, Tsutomu; Yokoyama, Tatsuro; Miyamoto, Michihiko; Mori, Haruki; Kawauchi, Nobuya; Nobori, Tadahito; Sannohe, Kunio; Kamiya, Joji; Ishii, Masaaki; and Yoshihara, Kanji, 5,008,267, Cl. 514-269.000.
Mori, Kei. Disaster prevention system and construction for an underground space. 5,007,244, Cl. 62-53.100.

Mori, Keiji; and Kogita, Hidekazu, to Aiskin Seiki Kabushiki Kaisha. Mirror apparatus with vibrator for removing water drops. 5,007,722, Cl. 350-382.000.

Mori, Takaaki: *See*—
Minoura, Jun; Takahahi, Shigeyuki; Kato, Hisaki; Ito, Toshiyasu; Mori, Takaaki; Kato, Mamoru; Shimada, Junichi; and Okabayashi, Katsuaki, 5,007,718, Cl. 350-357.000.

Mori, Takashi: *See*—
Ibe, Hiroyuki; and Mori, Takashi, 5,007,204, Cl. 51-165.770.

Moribe, Akira: *See*—
Yamamoto, Yasuyoshi; Kaga, Yuzo; Yoshikawa, Toshiharu; and Moribe, Akira, 5,007,975, Cl. 156-154.000.

Moribe, Toshihiro: *See*—
Beppu, Osamu; Moribe, Toshihiro; Tezuka, Youjiro; and Chuma, Akira, 5,008,573, Cl. 310-67.00R.

Morii, Takayuki; and Yumoto, Hideaki, to TLV Company, Limited. Reduced pressure steam heat treating device. 5,007,582, Cl. 236-40.000.

Moriizumi, Koichi; and Fujino, Takeshi, to Mitsubishi Denki Kabushiki Kaisha. Method of preparing drawing data for charged beam exposure system. 5,008,830, Cl. 364-490.000.

Morikawa, Takao: *See*—
Kawashima, Kouzo; Morikawa, Takao; Aoyama, Teruo; and Kamiya, Akira, 5,008,331, Cl. 525-84.000.

Morimoto, Makoto: *See*—
Kanda, Yutaka; Yasuzawa, Tohru; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; and Morimoto, Makoto, 5,008,271, Cl. 514-292.000.

Morino, Ronald: *See*—
Keogh, Raymond J.; Morino, Ronald; and Burr, R. Page, 5,008,619, Cl. 324-207.160.

Morishita, Mitsuhiro: *See*—
Hosoda, Takuya; Morishita, Mitsuhiro; and Tamura, Takashi, 5,008,562, Cl. 307-265.000.

Morita, Yoshio, to Matsushita Electric Industrial Co., Ltd. Semiconductor light-emitting devices. 5,008,891, Cl. 372-45.000.

Morita, Yoshitsugu: *See*—
Mine, Katsutoshi; Morita, Yoshitsugu; and Miyamae, Satoshi, 5,008,733, Cl. 357-72.000.

Moritomo, Haruo: *See*—
Yazawa, Shigehiko; Ogawa, Toru; Moritomo, Haruo; Suya, Yoshiaki; and Nakayama, Mikio, 5,008,884, Cl. 370-110.100.

Morlotti, Norberto: *See*—
Bovisio, Cipriano; Foglieni, Carlo; Fumagalli, Fulgenzio; Morlotti, Norberto; and Palladini, Mario, 5,007,665, Cl. 285-334.000.

Mormann, Werner; Brahm, Barbara; and Brahm, Martin, to Bayer Aktiengesellschaft. Process for the preparation of polyurethanes with liquid crystal properties and diisocyanates suitable for carrying out the process. 5,008,447, Cl. 560-355.000.

Morrell, Marie J.: *See*—
Allenza, Paul; Clifft, Christy G.; and Morrell, Marie J., 5,008,195, Cl. 435-193.000.

Morris, Farrell. Percussion implement handle. 5,007,322, Cl. 84-453.000.

Morris, Gilbert V., to Teledyne Industries, Inc. Apparatus for solder coating printed circuit panels. 5,007,369, Cl. 118-56.000.

Morris, John B.; Lammers, Uve H. W.; and Marr, Richard A., to United States of America, Air Force. Mechanically rotated Doppler frequency shifter. 5,007,721, Cl. 350-486.000.

Morris, Matthew G.: *See*—
Crooks, Theodore J.; Zentz, Terry L.; and Morris, Matthew G., 5,007,518, Cl. 194-212.000.

Morrison, Wayne P.; and Castleberry, Neil T., to Morrison, Wayne P. Foldable container. 5,007,580, Cl. 229-117.170.

Mortensen, Gary B.: *See*—
Conley, Jerry J.; and Mortensen, Gary B., 5,008,579, Cl. 310-303.000.

Morton Thiokol, Inc.: *See*—
Myers, Robert I.; Brubaker, Bryce D.; and Overall, Robert E., 5,007,236, Cl. 60-256.000.

Moser, Hans: *See*—
Pissiotas, Georg; Moser, Hans; and Brunner, Hans-Georg, 5,007,951, Cl. 71-72.000.

Mosley Machinery Co., Inc.: *See*—
Newsom, Horace R., 5,007,337, Cl. 100-188.00R.

Moss, Robert J. Earth crust breaker. 5,007,485, Cl. 172-500.000.

Motorola, Inc.: *See*—
Davis, Walter L.; and Macnak, Philip P., 5,008,952, Cl. 455-12.000.
Freeburg, Thomas A.; and White, Richard E., 5,008,938, Cl. 380-50.000.
Goronkin, Herbert; and Kane, Robert C., 5,007,873, Cl. 445-49.000.
Hanke, Carl C.; Obregon, Carlos D.; and Atriss, Ahmad H., 5,008,635, Cl. 331-1.00A.
Jarrett, Robert B.; and Davies, Robert B., 5,008,736, Cl. 357-75.000.
Littlebury, Hugh W., 5,008,615, Cl. 324-158.00F.
Pireh, Ali, 5,008,925, Cl. 379-60.000.
Withers, Robert W.; and Johnson, Robert H., 5,008,836, Cl. 364-516.000.

Motta, Vincent C., to Warner-Lambert Company. Vibrating razor. 5,007,169, Cl. 30-45.000.

Mouille, Rene L.; and Suzzi, Robert J., to Societe Nationale Industrielle et Aerospatiale. Flapping restrainer device for rotorcraft rotor blades, and rotor head comprising said device. 5,007,799, Cl. 416-104.000.

Mozsolits, Karoly: *See*—
Ecsery, Zoltan; Knoll, Jozsef; Somfai, Eva; Torok, Zoltan; Szinnyei, Eva; and Mozsolits, Karoly, 5,008,292, Cl. 514-654.000.

MP-AKZO Corporation: *See*—
Keogh, Raymond J.; Morino, Ronald; and Burr, R. Page, 5,008,619, Cl. 324-207.160.

Mrenna, Stephen A., to Westinghouse Electric Corp. Circuit breaker with tamper indicating calibration means. 5,008,645, Cl. 337-70.000.

Mrozik, Helmut: *See*—
Fisher, Michael H.; Wyvratt, Matthew J.; and Mrozik, Helmut, 5,008,250, Cl. 514-30.000.

MTI Precision Products, Inc.: *See*—
Meller, Moshe; and Feldman, Michael, 5,007,832, Cl. 433-126.000.

Mucan Diagnostics Pty. Ltd.: *See*—
Linnane, Anthony W., 5,008,184, Cl. 435-7.230.

Muck, Karl-Friedrich: *See*—
Beck, Horst-Philipp; Emig, Gerhard; Wiesgickl, Gunther; Burg, Karlheinz; and Muck, Karl-Friedrich, 5,008,463, Cl. 568-487.000.

Mucke, Horst: *See*—
Wutzler, Peter; Mucke, Horst; and Santasalo, Lauri, 5,008,079, Cl. 422-28.000.

Mudgett, Donald, to Lestox, Inc. Electric cable with burn resistant characteristics and method of manufacture. 5,008,495, Cl. 174-121.00R.

Mueller, Bruce M., to Seaquist Closures. Container with a unitary closure and method for making same. 5,008,066, Cl. 264-537.000.

Mueller, Heinz: *See*—
Artzt, Peter; and Mueller, Heinz, 5,007,136, Cl. 19-65.00A.

Mueller, Martin: *See*—
Mueller, Martin J.; Mueller, Martin; and Weingandt, Michael A., 5,007,466, Cl. 141-1.000.

Mueller, Martin J.; Mueller, Martin; and Weingandt, Michael A., to Osgood Industries, Inc. Method and apparatus for filling ice cream containers. 5,007,466, Cl. 141-1.000.

Muench, August A., Jr. Apparatus and method for marine habitat development. 5,007,377, Cl. 119-4.000.

Mukai, Nobuhiro: *See*—
Makino, Takayuki; Mukai, Nobuhiro; and Ige, Hitoshi, 5,008,300, Cl. 522-8.000.

Mullen, Charles E.; and Crater, Arthur H., to Eastman Kodak Company. Device for aligning and mounting a copier or printer subsystem. 5,007,760, Cl. 403-13.000.

Mullendore, James A.: *See*—
Spencer, James R.; and Mullendore, James A., 5,008,071, Cl. 419-28.000.

Muller, Eckart, to Volkswagen A.G. Diesel internal combustion engine with temperature-dependent adjustment of start of fuel injection. 5,007,237, Cl. 60-285.000.

Muller, Erich: *See*—
Heckel, Armin; Nickl, Josef; Muller, Erich; Narr, Berthold; Weisenberger, Johannes; Eisert, Wolfgang; and Muller, Thomas, 5,008,290, Cl. 514-544.000.

Muller, Gerhard: *See*—
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Muller, Horst: *See*—
Schuster, Johann; Piehler, Martin; Muller, Horst; and Schneider, Otto, 5,008,229, Cl. 502-167.000.

Muller, Michael; Podszun, Wolfgang; and Winkel, Jens, to Bayer Aktiengesellschaft. Urea-containing (meth) acrylic acid derivatives of triisocyanates. 5,008,436, Cl. 560-26.000.

Muller, Thomas: *See*—
Heckel, Armin; Nickl, Josef; Muller, Erich; Narr, Berthold; Weisenberger, Johannes; Eisert, Wolfgang; and Muller, Thomas, 5,008,290, Cl. 514-544.000.

Munakata, Hirohide: *See*—
Nishimura, Yukuo; Haruta, Masahiro; Munakata, Hirohide; Kuwae, Yoko; Miyazaki, Toshihiko; and Yuasa, Satoshi, 5,007,714, Cl. 350-353.000.

Munakata, Tamotsu: *See*—
Nakamura, Takashi; Yasukochi, Yoshimi; Munakata, Tamotsu; and Nakashima, Masaharu, 5,008,756, Cl. 358-210.000.

Mundy, David J., to Eaton Leonard Technologies, Inc. Optical probe with overlapping detection fields. 5,008,555, Cl. 250-560.000.

Munting, Evrard: *See*—
Vincent, Andre; and Munting, Evrard, 5,007,935, Cl. 623-22.000.

Munz, Rolf, to Eastman Kodak Company. Hold-back device for selectively separating sheets fed seriatem to a stack. 5,007,797, Cl. 414-790.800.

Murai, Tatsuya: *See*—
Shinada, Masayuki; Ikesue, Masumi; Kikuno, Mitsutoyo; and Murai, Tatsuya, 5,008,709, Cl. 355-309.000.

Murakami Kaimeido Co., Ltd.: *See*—
Nakayama, Kiyoshi; and Luigi, Darbesio, 5,008,603, Cl. 318-568.100.

Murakami, Koichi: *See*—
Shimizu, Katsuichi; Shibata, Takehiko; Yokomizo, Yoshikazu; Suzuki, Akira; Murakami, Koichi; Yoshida, Tadashi; Tsukada, Masaharu; Nagashima, Nao; and Miyagi, Ken, 5,008,760, Cl. 358-451.000.

Murakami, Tetsuo: *See*—
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Murakami, Tsutomu: *See*—
Nakagawa, Katsumi; Ishihara, Shunichi; Kanai, Masahiro; Murakami, Tsutomu; Arao, Kozo; Fujioka, Yasushi; and Sakai, Akira, 5,008,726, Cl. 357-30.000.

Murakami, Yoshiaki: *See*—
Mizumoto, Takeshi; and Murakami, Yoshiaki, 5,007,882, Cl. 474-84.000.

Murakawa, Kenichi: *See*—
Kitamura, Toru; Ohashi, Yoshio; Sekino, Masami; and Murakawa, Kenichi, 5,008,001, Cl. 208-143.000.
Muraki, Katsuyuki: *See*—
Torii, Nobutoshi; Mizuno, Hitoshi; and Muraki, Katsuyuki, 5,008,832, Cl. 364-513.000.
Muramatsu, Sadao; Hashiba, Yukifumi; and Ikeda, Yuuichi, to Kyocera Corporation. Control apparatus for image sensor. 5,008,698, Cl. 354-429.000.
Murasaki, Kiyomi: *See*—
Itoh, Tatsuo; Ito, Hisayoshi; and Murasaki, Kiyomi, 5,008,802, Cl. 364-140.000.
Murase, Koichi: *See*—
Iida, Masanori; Hagiwara, Kiyokazu; Asakura, Hiroyuki; Nishioka, Minoru; and Murase, Koichi, 5,007,709, Cl. 350-162.220.
Murata, Jun, to Canon Kabushiki Kaisha. Platen roller. 5,008,138, Cl. 428-36.400.
Murata Mfg. Co., Ltd.: *See*—
Hashimoto, Akira; and Arai, Shunji, 5,008,600, Cl. 315-370.000.
Tamaki, Kuniaki; Sakai, Norio; and Minowa, Kenji, 5,007,534, Cl. 206-329.000.
Murata, Shizuo; Nakayama, Minoru; Furukawa, Kenji; and Kobayashi, Ryuji, to Chisso Corporation. Diamino compounds, dinitro compounds, diol compounds and a process for preparing the diamino compounds. 5,008,456, Cl. 564-322.000.
Murayama, Fumio; and Ando, Tomiaki, to Pioneer Electronic Corp. Water-proof speaker unit. 5,008,945, Cl. 381-194.000.
Murayama, Hisao: *See*—
Sakamoto, Koji; Tanzawa, Misao; Iwata, Nobuo; Murayama, Hisao; Takahashi, Susumu; and Komada, Kenya, 5,008,711, Cl. 355-206.000.
Murphy, Charles A.: *See*—
Ahmadi, Hamid; Beha, Johannes G.; Denzel, Wolfgang E.; Engbersen, Antonius P.; Luijten, Ronald P.; Murphy, Charles A.; and Port, Erich, 5,008,878, Cl. 370-60.000.
Murray, William D. Lighted handlebar for bicycles. 5,008,782, Cl. 362-72.000.
Murtiashaw, Charles W., to Pfizer Inc. Process for the production of O2,2'-anhydro-1-(β-D-arabinofuranosyl)thymine. 5,008,384, Cl. 536-23.000.
Murwald, Mario: *See*—
Grohn, Michael; Murwald, Mario; Thoma, Frank; and Hoffmann, Karlheinz, 5,007,401, Cl. 123-509.000.
Mushinski, Roger J.; Lewis, Charles E.; and Casey, Lawrence J., to Appleton Papers Inc. Interleaved spiral wrapping of foam product and stretch film for packaging carbonless paper rolls. 5,007,538, Cl. 206-523.000.
Musielak, Ronald L., to R.V.R. Enterprises, Ltd. Insulated cooling container for canned liquids. 5,007,250, Cl. 62-372.000.
Musto, Mario S.; and Davis, Scott W. Fore-and-aft adjuster for bicycle seat. 5,007,675, Cl. 297-195.000.
Muth, James C., to Spacesaver Corporation. Mobile carriage with center drive. 5,007,351, Cl. 105-101.000.
Myers, Darren J.: *See*—
Fritts, Monty; and Myers, Darren J., 5,007,212, Cl. 52-2.180.
Myers, Earl C., Jr.: *See*—
Defibaugh, George R.; Myers, Earl C., Jr.; and Smith, Steven G., 5,007,862, Cl. 439-607.000.
Myers, Robert I.; Brubaker, Bryce D.; and Overall, Robert E., to Morton Thiokol, Inc. Removable rocket motor igniter. 5,007,236, Cl. 60-256.000.
Myers, Robert L.: *See*—
Cox, Roger L.; DeLoye, Michael J.; and Myers, Robert L., 5,008,829, Cl. 364-480.000.
Nabisco Brands, Inc.: *See*—
Klemann, Lawrence P.; Finley, John W.; and Scimone, Anthony, 5,008,126, Cl. 426-611.000.
Rosnack, Ellen M.; Pray, Larry A.; Marable, Alger C.; and Zekert, Gerry C., 5,008,122, Cl. 426-417.000.
Wilson, Mildred N., 5,008,124, Cl. 426-589.000.
Nachi-Fujikoshi Corporation: *See*—
Souketani, Koichi; Ito, Yukio; Sasaki, Yoshio; Kurita, Teiji; and Tamiya, Jun, 5,007,773, Cl. 407-27.000.
Nada, Minoru: *See*—
Ozawa, Takashi; and Nada, Minoru, 5,008,713, Cl. 355-319.000.
Nadkarni, Arun A.; and Sankrithi, Mithra M. K. V. Apparatus and methods for automatically maintaining aircraft track angle. 5,008,825, Cl. 364-434.000.
Naeumann, Fritz; and Hickmann, Eckhard, to BASF Aktiengesellschaft. Preparation of benzyl ketones. 5,008,461, Cl. 568-322.000.
Naf, Werner, to interTechno AG. Method for the cleaning of the interior of installed conduits. 5,007,461, Cl. 138-97.000.
Nagahara, Shin: *See*—
Nakagawa, Masaru; Sumino, Fumio; Hiro, Masaaki; Kashimura, Noboru; and Nagahara, Shin, 5,008,168, Cl. 430-56.000.
Nagai, Kazuhiko, to Jidosha Denki Kogyo K.K. Filler cap of jar for washer. 5,007,287, Cl. 73-290.00B.
Nagai, Tetsuji; Torii, Katura; and Ohno, Yoshio, to Fuji Photo Film Co., Ltd. Method of sequential monitoring and apparatus for practicing the same. 5,008,842, Cl. 364-551.010.
Nagamatsu, Tsutomu: *See*—
Washizu, Takehiro; and Nagamatsu, Tsutomu, 5,007,386, Cl. 123-52.0MC.
Nagame, Hiroshi: *See*—
Rokutanzono, Takashi; Ide, Yukio; Nagame, Hiroshi; Ohshima, Kohichi; Kojima, Narihito; and Nousho, Shinji, 5,008,172, Cl. 430-67.000.
Nagano Japan Radio Co., Ltd.: *See*—
Kobayashi, Hitoshi; Takano, Akira; Narusawa, Naoharu; Tsukada, Yukihiko; Sakamoto, Hiroshi; Hirano, Masaki; and Ando, Masao, 5,008,710, Cl. 355-202.000.
Nagaoka, Shinji; Sato, Koji; and Kawai, Michio, to Seikosha Co., Ltd. Rangefinder for camera. 5,008,695, Cl. 354-403.000.
Nagashima, Nao: *See*—
Shimizu, Katsuichi; Shibata, Takehiko; Yokomizo, Yoshikazu; Suzuki, Akira; Murakami, Koichi; Yoshida, Tadashi; Tsukada, Masaharu; Nagashima, Nao; and Miyagi, Ken, 5,008,760, Cl. 358-451.000.
Nagatsuma, Nobuyoshi: *See*—
Kamata, Yoshiharu; Nagatsuma, Nobuyoshi; Ozawa, Mituharu; and Yoshioka, Hiroshi, 5,007,154, Cl. 29-430.000.
Nagel, Peter: *See*—
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Naggi, Annamaria: *See*—
Casu, Benito; Torri, Giangiacomo; Naggi, Annamaria; Mantovani, Marisa; Pescador, Rodolfo; Porta, Roberto; and Prino, Giuseppe, 5,008,253, Cl. 514-54.000.
Najafi-Sani, Mohammad; and Bex, Philip A. Shaping of bonded abrasive products. 5,008,513, Cl. 219-121.690.
Nakachi, Takeshi; Hata, Akio; and Watanabe, Yoshihisa, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Resin for magnetic recording media from vinyl chloride polymer with quaternary groups. 5,008,357, Cl. 526-292.200.
Nakagawa, Asaharu, to Kitagawa Industries Co., Ltd. Strip cable. 5,008,488, Cl. 174-36.000.
Nakagawa, Katsumi; Ishihara, Shunichi; Kanai, Masahiro; Murakami, Tsutomu; Arao, Kozo; Fujioka, Yasushi; and Sakai, Akira, to Canon Kabushiki Kaisha. PIN junction photovoltaic element containing Zn, Se, Te, H in an amount of 1 to 4 atomic %. 5,008,726, Cl. 357-30.000.
Nakagawa, Masaru; Sumino, Fumio; Hiro, Masaaki; Kashimura, Noboru; and Nagahara, Shin, to Canon Kabushiki Kaisha. Photosensitive member for electrophotography. 5,008,168, Cl. 430-56.000.
Nakagishi, Toshio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Carriage lock apparatus. 5,008,876, Cl. 369-244.000.
Nakahara, Toshiro, to Ichikoh Industries, Ltd. Wedge-type lamp bulb assembly. 5,008,588, Cl. 313-318.000.
Nakai, Hatsuo, to Clover Co., Ltd. Dial lock. 5,007,262, Cl. 70-312.000.
Nakai, Noboru; and Isozaki, Osamu, to Kansai Paint Co., Ltd. Aqueous organosilicon resin coating compositions. 5,008,328, Cl. 524-759.000.
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, to Otsuka Pharmaceutical Co., Ltd. IL-1α derivatives and drugs. 5,008,374, Cl. 530-351.000.
Nakajima, Akihiko: *See*—
Matsumoto, Shusaku; Hatakawa, Yoshio; and Nakajima, Akihiko, 5,008,387, Cl. 536-119.000.
Nakajima, Akinobu: *See*—
Aoyama, Motoo; Koyama, Junichi; Uchikawa, Sadao; Bessho, Yasunori; Ozawa, Michihiro; Nakamura, Mitsunari; Nakajima, Akinobu; and Maruyama, Hiromi, 5,008,070, Cl. 376-419.000.
Nakajima, Ikuo: *See*—
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Nakajima, Masashi; Tomita, Nobuo; Suzaki, Kenji; Kaneko, Akira; and Sawaki, Mikio, to Nippon Soda Co., Ltd. Method for the production of hydroxylamine derivatives. 5,008,455, Cl. 564-300.000.
Nakajima, Yuji; and Mochizuki, Masashi, to Hoya Corporation. Multilayered surface reflecting mirror. 5,007,710, Cl. 350-166.000.
Nakamaru, Koichi: *See*—
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Nakamori, Hideki: *See*—
Uno, Ken; Fujino, Takuo; and Nakamori, Hideki, 5,008,002, Cl. 204-192.310.
Nakamura, Arata, to Omron Tateisi Electronics Co. Photoelectric switching apparatus of reflection type projecting red and infrared light. 5,008,529, Cl. 250-221.000.
Nakamura, Konichi: *See*—
Mizuniwa, Seiji; Hattori, Akio; Kurihara, Tooru; Aoyama, Seigi; and Nakamura, Konichi, 5,007,979, Cl. 156-605.000.
Nakamura, Makio, to Sharp Kabushiki Kaisha. Installation structure of a microwave oscillation circuit unit. 5,008,638, Cl. 331-68.000.
Nakamura, Mitsunari: *See*—
Aoyama, Motoo; Koyama, Junichi; Uchikawa, Sadao; Bessho, Yasunori; Ozawa, Michihiro; Nakamura, Mitsunari; Nakajima, Akinobu; and Maruyama, Hiromi, 5,008,070, Cl. 376-419.000.
Nakamura, Takashi; Tanaka, Haruhiko; Hyodo, Touru; and Osanai, Yasuhiro, to Janome Sewing Machine Company Limited. Multifunction switching control system. 5,008,601, Cl. 318-268.000.
Nakamura, Takashi; Yasukochi, Yoshimi; Munakata, Tamotsu; and Nakashima, Masaharu. Video camera system with audio switching circuit. 5,008,756, Cl. 358-210.000.
Nakamura, TetsuHisa: *See*—
Rha, ChoKyun; Pradipasena, Pasawadee; Nakamura, TetsuHisa; Easson, Donald D., Jr.; and Sinskey, Anthony J., 5,008,108, Cl. 424-401.000.
Nakanishi, Koji; Oltz, Eugene M.; and Grunberger, Dezider, to Trustee of Columbia University in the City of New York, The. Caffeic acid

esters and methods of producing and using same. 5,008,441, Cl. 560-75.000.
Nakanishi, Yoshinobu: *See—*
Yamamura, Yoshihiro; Ogihara, Takashi; Nakanishi, Yoshinobu; and Nishizono, Tomohiro, 5,008,937, Cl. 380-50.000.
Nakaniwa, Shinpei, to Japan Electronic Control Systems Co., Ltd. Method and apparatus for self-diagnosis of air leakage in control system of internal combustion engine. 5,007,399, Cl. 123-489.000.
Nakano, Takafumi; Seo, Akikazu; Soeda, Hiromitsu; and Sueoka, Kazufumi, to Mitsubishi Jukogyo Kabushiki Kaisha; and Ryomei Engineering Co., Ltd. Keyless printing press. 5,007,341, Cl. 101-349.000.
Nakashima, Masaharu: *See—*
Nakamura, Takashi; Yasukochi, Yoshimi; Munakata, Tamotsu; and Nakashima, Masaharu, 5,008,756, Cl. 358-210.000.
Nakashima, Naoto: *See—*
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Nakasuji, Kazuyuki; Hayashi, Chihiro; and Suzushima, Yoshiyuki, to Sumitomo Metal Industries Ltd.; and Sumitomo Special Metals Co., Ltd. Multiple-coke complex material and method of manufacturing the same. 5,007,577, Cl. 228-265.000.
Nakayama, Haruo: *See—*
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Nakayama, Hitoshi, to Snow Brand Milk Products Co., Ltd. Thermoelectric humidifier and display case provided with such humidifier. 5,007,242, Cl. 62-3.200.
Nakayama, Kiyoshi; and Luigi, Darbesio, to Murakami Kaimeido Co., Ltd.; and Fiat Auto S.p.A. Electrically foldable rearview mirrors interlocked with door locks. 5,008,603, Cl. 318-568.100.
Nakayama, Mikio: *See—*
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Nakayama, Minoru: *See—*
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Nakazawa, Hideo: *See—*
Yamaguchi, Toru; Inazuki, Yukio; and Nakazawa, Hideo, 5,007,243, Cl. 62-51.100.
Nalco Chemical Company: *See—*
Broom, Henry T., 5,008,035, Cl. 252-312.000.
Nalepa, Christopher J.; Presswood, J. Kenneth; and Knapp, Gordon G., to Ethyl Corporation. Aromatic diimines. 5,008,453, Cl. 564-271.000.
Napco Security Systems, Inc.: *See—*
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Napoleon, Marcel: *See—*
Laurent, Dominque; Fortunato, Gerard; Damin, Bernard; and Napoleon, Marcel, 5,007,733, Cl. 356-70.000.
Narisada, Masayuki; Ohtani, Mitsuaki; Watanabe, Fumihiko; and Kawata, Kyozo, to Shionogi & Co., Ltd. Process for preparing 1,4-bridged cyclohexane carboxylic acid derivatives. 5,008,409, Cl. 549-463.000.
Narita, Seiichi: *See—*
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Narita, Tsuneo: *See—*
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Narita, Yasushi, to Nissan Motor Co., Ltd. Line pressure control for automatic transmission. 5,007,308, Cl. 74-866.000.
Naro, Rodney L.; Csonka, James M.; and Merritt, Michael A., to American Alloys, Inc. Inoculant for gray cast iron. 5,008,074, Cl. 420-578.000.
Narr, Berthold: *See—*
Heckel, Armin; Nickl, Josef; Muller, Erich; Narr, Berthold; Weisenberger, Johannes; Eisert, Wolfgang; and Muller, Thomas, 5,008,290, Cl. 514-544.000.
Narusawa, Naoharu: *See—*
Kobayashi, Hitoshi; Takano, Akira; Narusawa, Naoharu; Tsukada, Yukihiko; Sakamoto, Hiroshi; Hirano, Masaki; and Ando, Masao, 5,008,710, Cl. 355-202.000.
Nasby, James S.; and Rood, Michael J., to Perf-Mate Company. Sprocket feed strip remover. 5,007,571, Cl. 225-106.000.
Nash, Richard M.: *See—*
Smegal, John A.; Ryan, Robert C.; and Nash, Richard M., 5,008,003, Cl. 208-254.00H.
Nathan, Anthony: *See—*
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National Semiconductor Corporation: *See—*
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National Steel Corporation: *See—*
Cox, Laurence C.; Dugan, Raymond; Evans, Daniel D.; Griffith, Robert; Handley, Terry L.; and Leeper, Jeffrey J., 5,007,318, Cl. 83-425.200.
Natori, Shunji, to Sanwa Kagaku Kenkyusho Co., Ltd. Biologically active polypeptide and use thereof. 5,008,371, Cl. 530-324.000.
Natsuhara, Toshiya: *See—*
Enoguchi, Yuji; Natsuhara, Toshiya; and Yamamoto, Masashi, 5,008,708, Cl. 355-259.000.
NEC Corporation: *See—*
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Ikeda, Setsuko, 5,008,858, Cl. 365-233.500.
Ishii, Eiichi, 5,008,673, Cl. 341-144.000.
Kiyono, Mikio, 5,008,957, Cl. 455-618.000.
Mimura, Yoshikazu; Takano, Keiichi, deceased; and Gotou, Tomohisa, 5,008,173, Cl. 430-78.000.
Mizoguchi, Akane, 5,008,857, Cl. 365-200.000.
Shibata, Kazuo; and Komuro, Toshio, 5,008,567, Cl. 307-443.000.
Yamamura, Yoshihiro; Ogihara, Takashi; Nakanishi, Yoshinobu; and Nishizono, Tomohiro, 5,008,937, Cl. 380-50.000.
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Negle, Hans, to U.S. Philips Corporation. Measuring and damping resistor arrangement for a high-voltage apparatus. 5,008,913, Cl. 378-105.000.
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Neidermeyer, Uwe; Kragl, Udo; Kula, Maria R.; Wandrey, Christian; Makrylaleas, Kyriakos; and Drauz, Karlheinz, to Kernforschungsanlage Juelich GmbH; and Degussa Aktiengesellschaft. Enzymatic process for the preparation of optically active cyanohydrins. 5,008,192, Cl. 435-128.000.
Neiss, Edward S.; and Allen, Larry M., to Chemex Pharmaceuticals, Inc. Methods of treating tumors with compositions of catecholic butanes. 5,008,294, Cl. 514-731.000.
Nelles, Josef, to Accumulatorenwerke Hoppecke Carl Zoellner & Sohn GmbH & Co. KG. Method and apparatus for producing cathodes for dry-cell batteries, especially lithium batteries. 5,007,467, Cl. 141-1.100.
Nelson, Linda H., to General Electric Company. Composition. 5,008,315, Cl. 524-180.000.
Nelson, Nancy W.; Cosart, Lee D., III; Peregrino, Luiz; and Ingman, Eric M., to Hewlett-Packard Company. Method for harmonic number determination in a microwave frequency counter. 5,008,610, Cl. 324-84.000.
Nelson, T. Craig: *See—*
Fries, William J.; Kleinschnitz, Donald; and Nelson, T. Craig, 5,008,808, Cl. 364-200.000.
Nelson, Thomas E., to Soltech, Inc. Insulated refrigerator door construction. 5,007,226, Cl. 52-809.000.
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Nesheiwat, Afif M., to Phillips Petroleum Company. Preparation of poly(arylene sulfide/sulfone) polymer with addition of water after polymerization is initiated. 5,008,368, Cl. 528-388.000.
Nesselrode, Frederick: *See—*
Bellis, Peter D.; and Nesselrode, Frederick, 5,007,806, Cl. 417-360.000.
Nestaas, Eirik: *See—*
Wergeland, Ivar; Senstad, Ingeborg C.; and Nestaas, Eirik, 5,008,197, Cl. 435-240.240.
Nestec S.A.: *See—*
Bewley, David R.; Brimelow, Christopher J. B.; and Wright, Kenneth W., 5,008,123, Cl. 426-509.000.
Favre, Eric; Masek, Petr; and Truchement, Bernard, 5,008,013, Cl. 210-482.000.
Kratky, Zdenek; and Tandy, John S., 5,008,381, Cl. 536-8.000.
Nettles, James A.: *See—*
Broughton, George L.; Breckenfeld, Paul W.; Mate, David W.; Nettles, James A.; and Rogers, Duane E., 5,007,393, Cl. 123-195.00R.
Network Equipment Technologies, Inc.: *See—*
Mathur, Ashish, 5,008,814, Cl. 364-200.000.
Neugebauer, Charles F.: *See—*
Agranat, Aharon J.; Neugebauer, Charles F.; and Yariv, Amnon, 5,008,833, Cl. 364-513.000.
Neumann, Peter: *See—*
Aumueller, Alexander; Neumann, Peter; and Trauth, Hubert, 5,008,312, Cl. 524-92.000.
Spang, Peter; Neumann, Peter; Wagenblast, Gerhard; and Trauth, Hubert, 5,008,397, Cl. 548-331.000.
Neuwirth, Helmuth; Meyerhoefer, Carl; Carney, William V.; and Visconti, Peter, to Porta Systems Corp. Telephone circuit protector module having plural circuit grounding means. 5,008,772, Cl. 361-119.000.
Neville, Donald G.: *See—*
Ebbing, Charles E.; and Neville, Donald G., 5,007,499, Cl. 181-258.000.
New SD, Inc: *See—*
Egley, Bert; and Hanson, Richard A., 5,007,290, Cl. 73-517.00R.
New Visions Corporation: *See—*
Fick, Larry D., 5,007,566, Cl. 224-32.00R.
New York University Medical Center: *See—*
Fishman, Sidney; and Lembeck, William, 5,007,937, Cl. 623-34.000.
Newborn, Herbert A.: *See—*
Kumar, Kaplesh; and Newborn, Herbert A., 5,007,972, Cl. 148-102.000.

Newkirk, Marc S.; and Aghajanian, Michael K., to Lanxide Technology Company, LP. Method of forming metal matrix composite bodies by utilizing a crushed polycrystalline oxidation reaction product as a filler, and products produced thereby. 5,007,476, Cl. 164-97.000.

Newlove, John C.: *See—*
Williams, Dennis A.; Horton, Roger L.; Newlove, John C.; and Chumley, Robert E., 5,007,481, Cl. 166-300.000.

Newman, Hugh D., Jr.: *See—*
Bezwada, Rao S.; Newman, Hugh D., Jr.; and Shalaby, Shalaby W., 5,007,923, Cl. 606-231.000.

Newsom, Horace R., to Mosley Machinery Co., Inc. Oversize bale release mechanism for waste material baler. 5,007,337, Cl. 100-188.00R.

Newton Instrument Company: *See—*
Salmon, Garland R., 5,008,779, Cl. 361-415.000.

NGK Insulators, Ltd.: *See—*
Hattori, Isao; and Futamura, Shoji, 5,008,509, Cl. 219-69.150.
Kato, Shigeki; and Inoue, Katsuhiro, 5,008,054, Cl. 264-63.000.

NGK Spark Plug Co., Ltd.: *See—*
Bekki, Katsutoshi; Kondo, Kazuo; Shibata, Yoshimasa; and Niwa, Shigeo, 5,007,932, Cl. 623-18.000.

Nguyen, David M.: *See—*
Coolidge, Robert B.; and Nguyen, David M., 5,007,493, Cl. 175-329.000.

Nichia Kagaku Kogyo K.K.: *See—*
Arai, Kiyotaka; Sumoto, Hirofumi; and Ichinomiya, Keizi, 5,008,789, Cl. 362-255.000.

Nichols, Carl S., to Hoechst Celanese Corporation. Catalyst for preparing high clarity, colorless polyethylene terephthalate. 5,008,230, Cl. 502-170.000.

Nickel, Dwight E.; O'Halloran, Michael L.; and Case, Cecil L., to Hay & Forage Industries. Tine tube bearing assembly for a harvesting reel. 5,007,235, Cl. 56-12.400.

Nickl, Josef: *See—*
Heckel, Armin; Nickl, Josef; Muller, Erich; Narr, Berthold; Weisenberger, Johannes; Eisert, Wolfgang; and Muller, Thomas, 5,008,290, Cl. 514-544.000.

Nicolas, Pierre; and Pantigny, Philippe, to Commissariat a l'Energie Atomique. System for the detection of information in the form of electromagnetic radiation and reading the detected information. 5,008,544, Cl. 250-349.000.

Niederst, Ken W.: *See—*
Nugent, Richard M., Jr.; Niederst, Ken W.; and Seiner, Jerome A., 5,008,137, Cl. 428-35.400.

Nihon Tokushu Noyaku Seizo K.K.: *See—*
Kume, Toyohiko; Goto, Toshio; Kamochi, Atsumi; Yanagi, Akihiko; Miyauchi, Hiroshi; and Asami, Tadao, 5,007,952, Cl. 71-73.000.

Niimura, Toshinobu: *See—*
Takahashi, Yasuo; Suzuki, Kazuo; Niimura, Toshinobu; and Kano, Tokio, 5,007,995, Cl. 204-299.00R.

Niizato, Tomonori; Noguchi, Katsumi; and Tsukimura, Kiyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Cylinder head structure for multiple cylinder engines. 5,007,392, Cl. 123-193.00H.

Nikon Corporation: *See—*
Hamanishi, Yoshinari, 5,007,720, Cl. 350-463.000.
Juen, Masahiro, 5,008,759, Cl. 358-335.000.
Kimura, Keita; and Yamamoto, Tetsuya, 5,008,757, Cl. 358-213.130.

Nimlock Company: *See—*
Evensen, David P., 5,007,473, Cl. 160-135.000.

Nino, Naohi, to Koito Manufacturing Co., Ltd. Headlamp unit. 5,008,781, Cl. 362-61.000.

Ninomiya, Takeshi: *See—*
Takayama, Jun; Ninomiya, Takeshi; Fujita, Tadao; and Inaba, Yoshiaki, 5,008,668, Cl. 341-83.000.

Ninomiya, Yuichi: *See—*
Kitaura, Hiromu; Isobe, Mitsuo; Kawahara, Isao; Hirauchi, Yoshio; Ninomiya, Yuichi; Ohtsuka, Yoshimichi; and Izumi, Yoshinori, 5,008,753, Cl. 358-171.000.

Nippon Carbide Kogyo Kabushiki Kaisha: *See—*
Ochi, Katsura; Oonishi, Yasuaki; and Kinsen, Kazuhisa, 5,008,139, Cl. 428-40.000.

Nippon Colin Company Ltd.: *See—*
Branstetter, Ronald L.; Jaeb, Jonathan P.; and Gabelmann, Jeffrey M., 5,007,423, Cl. 128-633.000.

Nippon Hoso Kyokai: *See—*
Kitaura, Hiromu; Isobe, Mitsuo; Kawahara, Isao; Hirauchi, Yoshio; Ninomiya, Yuichi; Ohtsuka, Yoshimichi; and Izumi, Yoshinori, 5,008,753, Cl. 358-171.000.

Nippon Oil and Fats: *See—*
Iwanami, Koichi; and Ito, Masatsugu, 5,008,118, Cl. 424-498.000.

Nippon Oil and Fats Co., Ltd.: *See—*
Komai, Takeshi; Matsuyama, Kazuo; and Honma, Isao, 5,008,353, Cl. 526-230.500.

Nippon Paint Co., Ltd.: *See—*
Ishii, Keizou; Kuwajima, Teruaki; Miwa, Hiroshi; Kashihara, Akio; and Ishikura, Shinichi, 5,008,318, Cl. 524-284.000.

Nippon Piston Ring Co., Ltd.: *See—*
Fujita, Yoshiaki; Kawai, Satoshi; and Takeguchi, Shunsuke, 5,007,956, Cl. 75-238.000.

Nippon Scientific Co., Ltd.: *See—*
Kobayashi, Nobutoshi; and Murakami, Tetsuo, 5,007,183, Cl. 34-92.000.

Nippon Seiko Kabushiki Kaisha: *See—*
Machida, Hisashi, 5,007,298, Cl. 74-200.000.

Nippon Soda Co., Ltd.: *See—*
Nakajima, Masashi; Tomita, Nobuo; Suzaki, Kenji; Kaneko, Akira; and Sawaki, Mikio, 5,008,455, Cl. 564-300.000.

Nippon Soken Inc.: *See—*
Taga, Yasunori; Yamadera, Hideya; Aoki, Keiji; and Hattori, Tadashi, 5,008,149, Cl. 428-336.000.

Nippon T&T Corp.: *See—*
Saito, Kazuharu; Matsukura, Hiroyasu; Komase, Hiroshi; Tsuneda, Haruhiro; Watanabe, Junji; Saito, Tadao; Doy, Toshiroh; and Matsunaga, Kazuo, 5,007,209, Cl. 51-283.00R.

Nippon Zeon Co., Ltd.: *See—*
Okumura, Kin-ichi; Chono, Koji; Ozeki, Hiroshi; and Hamada, Tadao, 5,008,065, Cl. 264-328.600.
Yamada, Hideaki; Tani, Yoshiki; Shimizu, Sakayu; and Shiozaki, Shozo, 5,008,188, Cl. 435-88.000.

Nippondenso Co., Ltd.: *See—*
Atsumi, Morihiro; and Tanaka, Kiyoaki, 5,008,584, Cl. 313-136.000.
Kumita, Norio; Yamamoto, Takaaki; Narita, Seiichi; and Ori, Takaaki, 5,008,501, Cl. 200-61.45R.

Nishi, Takao; Uno, Tetsuyuki; Koga, Yasuo; and Chu, Gil-Namg, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivatives and salts thereof and pharmaceutical composition for inhibiting adhesion of thrombocytes. 5,008,274, Cl. 514-312.000.

Nishida, Tsuyoshi: *See—*
Ito, Ryoichi; Iwai, Koji; and Nishida, Tsuyoshi, 5,007,383, Cl. 123-41.490.

Nishigaki, Shinichi; and Bito, Shiro, to Olympus Optical Co., Ltd. Resectoscope apparatus. 5,007,907, Cl. 606-46.000.

Nishiguchi, Toshiji: *See—*
Okamura, Moriyuki; Nakajima, Ikuo; and Nishiguchi, Toshiji, 5,007,928, Cl. 623-6.000.

Nishijima, Tomio: *See—*
Sugimoto, Kazuaki; Nishijima, Tomio; Inoue, Teruhisa; Sugimoto, Yoshihiko; Suzuki, Masashi; and Matsushita, Izumi, 5,007,340, Cl. 101-227.000.

Nishikawa, Masayuki: *See—*
Karakida, Kenichi; Yagi, Shigeru; Fukuda, Yuzuru; Nishikawa, Masayuki; Roh, Te N.; Takahashi, Noriyoshi; Ono, Masato; Yokoi, Masaki; and Komori, Yumiko, 5,008,170, Cl. 430-65.000.

Nishikawa, Yasunori: *See—*
Inaba, Hirofumi; and Nishikawa, Yasunori, 5,007,850, Cl. 439-182.000.

Nishimoto, Tatsuo: *See—*
Okumoto, Takaharu; Nishimoto, Tatsuo; and Wakaki, Hideaki, 5,007,643, Cl. 273-167.00R.

Nishimura, Yosaku; and Smith, Glenn S., to Vital Kogyo Kabushiki Kaisha. Hand-operated chain block. 5,007,617, Cl. 254-372.000.

Nishimura, Yukuo; Haruta, Masahiro; Munakata, Hirohide; Kuwae, Yoko; Miyazaki, Toshihiko; and Yuasa, Satoshi, to Canon Kabushiki Kaisha. Optical device. 5,007,714, Cl. 350-353.000.

Nishino, Hoyoku; Iwasaki, Ryozo; Okabe, Akio; and Yogo, Yuki, to Lion Corporation. Method inhibiting the growth of cancer cells. 5,008,295, Cl. 514-766.000.

Nishioka, Minoru: *See—*
Iida, Masanori; Hagiwara, Kiyokazu; Asakura, Hiroyuki; Nishioka, Minoru; and Murase, Koichi, 5,007,709, Cl. 350-162.220.

Nishiuchi, Shohachi; Ohta, Shigeo; Imai, Hitoshi; and Meguro, Haruo, to Honda Giken Kogyo Kabushiki Kaisha. Successive cold working process. 5,007,266, Cl. 72-44.000.

Nishiyama, Nobumasa; Saito, Makoto; Ouchi, Yasuhide; Katoh, Yasuhiro; Kamo, Yoshihisa; Koizumi, Makoto; Aoi, Hajime; Sato, Naoki; and Tsuchiya, Reijiro, to Hitachi, Ltd. Readout circuit in magnetic recording device. 5,008,761, Cl. 360-45.000.

Nishiyama, Souji: *See—*
Tominaga, Takashi; Nishiyama, Souji; Sakuramoto, Takahumi; and Honda, Makoto, 5,008,151, Cl. 428-343.000.

Nishiyama, Toshikazu: *See—*
Iwata, Hitoshi; Noguchi, Kazumi; Nishiyama, Toshikazu; and Shinohara, Tadashi, 5,008,767, Cl. 360-103.000.

Nishizono, Tomohiro: *See—*
Yamamura, Yoshihiro; Ogihara, Takashi; Nakanishi, Yoshinobu; and Nishizono, Tomohiro, 5,008,937, Cl. 380-50.000.

Nissan Motor Company, Ltd.: *See—*
Ide, Takanobu, 5,007,304, Cl. 74-573.00F.
Narita, Yasushi, 5,007,308, Cl. 74-866.000.
Okuzumi, Hiroshi, 5,007,303, Cl. 74-573.00F.
Tamazawa, Tsuyoshi; and Hayashi, Yoshimasa, 5,007,307, Cl. 74-606.00R.

Nissan Shatai Company, Limited: *See—*
Ozawa, Makoto; Hirama, Yasuo; and Mizuno, Shyuzi, 5,007,677, Cl. 297-284.000.

Nissei Jushi Kogyo Kabushiki Kaisha: *See—*
Kanai, Toshiyuki; and Shinnoh, Nobuo, 5,008,060, Cl. 264-255.000.

Nisshin Flour Milling Co., Ltd.: *See—*
Takahashi, Toshihiro; Horaguchi, Tatsuo; Nakamaru, Koichi; and Suzuki, Yoshikuni, 5,008,266, Cl. 514-259.000.

Nisshinbo Industries, Inc.: *See—*
Kobayashi, Hitoshi; Takano, Akira; Narusawa, Naoharu; Tsukada, Yukihiko; Sakamoto, Hiroshi; Hirano, Masaki; and Ando, Masao, 5,008,710, Cl. 355-202.000.

Nitto Denko Corporation: *See—*
Tominaga, Takashi; Nishiyama, Souji; Sakuramoto, Takahumi; and Honda, Makoto, 5,008,151, Cl. 428-343.000.

Nitto Kohki Co., Ltd: *See—*
Shoji, Michihiro, 5,007,776, Cl. 408-6.000.

Niwa, Shigeo: *See*—
Bekki, Katsutoshi; Kondo, Kazuo; Shibata, Yoshimasa; and Niwa, Shigeo, 5,007,932, Cl. 623-18.000.
Noble, Stephen A., to Eastman Kodak Company. Image recording system and method. 5,008,697, Cl. 354-413.000.
Nobori, Tadahito: *See*—
Katakami, Tsutomu; Yokoyama, Tatsuro; Miyamoto, Michihiko; Mori, Haruki; Kawauchi, Nobuya; Nobori, Tadahito; Sannohe, Kunio; Kamiya, Joji; Ishii, Masaaki; and Yoshihara, Kanji, 5,008,267, Cl. 514-269.000.
Noda, Touru: *See*—
Ashida, Tetsuya; and Noda, Touru, 5,008,150, Cl. 428-340.000.
Nogami, Mitsuzo: *See*—
Furukawa, Nobuhiro; Inoue, Kenji; Nogami, Mitsuzo; Kameoka, Seiji; and Tadokoro, Motoo, 5,008,164, Cl. 429-59.000.
Noguchi, Hidehiko: *See*—
Kashiwara, Ryohei; Kashiwara, Hideaki; Noguchi, Hidehiko; and Kashiwara, Takeaki, 5,007,389, Cl. 123-169.0MG.
Noguchi, Katsumi: *See*—
Niizato, Tomonori; Noguchi, Katsumi; and Tsukimura, Kiyoshi, 5,007,392, Cl. 123-193.00H.
Noguchi, Kazumi: *See*—
Iwata, Hitoshi; Noguchi, Kazumi; Nishiyama, Toshikazu; and Shinohara, Tadashi, 5,008,767, Cl. 360-103.000.
Noji, Akio; Kamimura, Kenji; and Tsuzuki, Sadachika, to Honda Giken Kogyo Kabushiki Kaisha. Position detector for moving vehicle. 5,008,557, Cl. 250-561.000.
Nojiri, Howard H.: *See*—
Bobba, Mohan L.; and Nojiri, Howard H., 5,007,691, Cl. 350-6.700.
Nojiri, Kazuo: *See*—
Kawasaki, Yoshinao; Kawahara, Hironobu; Sato, Yoshiaki; Fukuyama, Ryooji; Nojiri, Kazuo; and Torii, Yoshimi, 5,007,981, Cl. 156-643.000.
Nomoto, Seiichiro: *See*—
Yamauchi, Hiroshi; Sugiyama, Isao; Saito, Isao; Nomoto, Seiichiro; Kamiya, Takashi; Machida, Yoshimasa; and Negi, Shigeto, 5,008,260, Cl. 514-202.000.
Nomoto, Shigeki, to Komatsu Zenoah Company. Engine start facilitating valve. 5,007,391, Cl. 123-182.000.
Nomura, Hiroaki: *See*—
Inoue, Keizo; Nomura, Hiroaki; and Tasaka, Akihiro, 5,008,454, Cl. 564-294.000.
Nomura, Masashi: *See*—
Sawamoto, Takeyuki; Nomura, Masashi; and Tarumi, Niro, 5,008.354, Cl. 526-246.000.
Nonaka, Katusnobu; and Sekine, Kazuyoshi, to Agency of Industrial Science and Technology; and Ministry of Internatinoal Trade and Industry. Leakage flux flaw detection method and apparatus utilizing a layered detector. 5,008,620, Cl. 324-213.000.
Noranda Inc.: *See*—
Reist, Marc; Persson, Hans; and Poggi, Daniel, 5,007,959, Cl. 75-645.000.
Nordsiek, Karl-Heinz: *See*—
Hellermann, Walter; Herrmann, Christoph; Fuchs, Hans-Bernd; Nordsiek, Karl-Heinz; and Wolpers, Jurgen, 5,008,343, Cl. 525-316.000.
Nor'Eastern Trawl Systems, Inc.: *See*—
Loverich, Gary F.; and Griffin, Barry A., 5,007,376, Cl. 119-3.000.
Norman, Amos; and Iwamoto, Keisuke S., to University of California, The Regents of the. Therapy x-ray scanner. 5,008,907, Cl. 378-65.000.
Norman, John A. T., to Air Products and Chemicals, Inc. Volatile fluorinated β-ketoimines and associated metal complexes. 5,008,415, Cl. 556-32.000.
Norris, Kjeld: *See*—
Markussen, Jan; Norris, Kjeld; and Langkjaer, Liselotte, 5,008,241, Cl. 514-3.000.
Norsolor (Orkem Group): *See*—
Druet, Bernard; and Rochet, Gerald, 5,008,365, Cl. 528-230.000.
North American Philips Corporation: *See*—
Akiwumi-Assani, Samuel O., 5,008,848, Cl. 364-725.000.
Phillips, Larry G.; Meyer, Edwin R.; and Greene, David C., 5,008,740, Cl. 358-23.000.
Tsou, Len-Yan, 5,007,982, Cl. 156-643.000.
North, Peter C.: *See*—
Coates, Ian H.; Oxford, Alexander W.; and North, Peter C., 5,008,272, Cl. 514-292.000.
Northern Elevator Limited: *See*—
Lindegger, Robert, 5,007,505, Cl. 187-89.000.
Northern Telecom Limited: *See*—
Roy, Marc P., 5,008,569, Cl. 307-465.000.
Norton Company: *See*—
Kelly, Robert G.; Loughlin, Bernard T.; and McCutcheon, William F., 5,007,943, Cl. 51-295.000.
Kuo, Shih-Yee; Cho, Hyun-Sam; and Bright, Jeffrey D., 5,008,132, Cl. 427-217.000.
Nousho, Shinji: *See*—
Rokutanzono, Takashi; Ide, Yukio; Nagame, Hiroshi; Ohshima, Kohichi; Kojima, Narihito; and Nousho, Shinji, 5,008,172, Cl. 430-67.000.
Novo Nordisk A/S: *See*—
Markussen, Jan; Norris, Kjeld; and Langkjaer, Liselotte, 5,008,241, Cl. 514-3.000.
Novotny, Donald B.: *See*—
Jach, Terrence J.; Geist, Jon C.; Carver, Gary P.; and Novotny, Donald B., 5,008,908, Cl. 378-70.000.
Nozawa, Toshiyuki: *See*—
Utsunomiya, Masayuki; Fujita, Shigeo; Nozawa, Toshiyuki; and Kamiyama, Morihiro, 5,008,401, Cl. 548-455.000.
Nozoe, Satosi: *See*—
Yonezawa, Tatsushi; and Nozoe, Satosi, 5,008,534, Cl. 250-229.000.
NT Incorporated: *See*—
Mayama, Tatsushige, 5,007,170, Cl. 30-232.000.
Nuclear Energy Services, Inc.: *See*—
Zezza, Louis J.; and Fiorelli, Frank, 5,007,460, Cl. 138-89.000.
Nugent, Richard M., Jr.; Niederst, Ken W.; and Seiner, Jerome A., to PPG Industries, Inc. Barrier coatings. 5,008,137, Cl. 428-35.400.
Nukada, Katsumi: *See*—
Akasaki, Yutaka; Nukada, Katsumi; and Sato, Katsuhiro, 5,008,431, Cl. 558-402.000.
Nulph, Robert J.: *See*—
Favstritsky, Nicolai A.; and Nulph, Robert J., 5,008,323, Cl. 524-469.000.
Numano, Yasuhiko, to Japan Air Lines Co., Ltd. Humidity-retaining mask. 5,007,114, Cl. 2-206.000.
Numata, Tomiyuki; Iwaki, Takashi; Kojima, Kunio; and DeGuchi, Toshihisa, to Sharp Kabushiki Kaisha. Semiconductor laser driving apparatus. 5,008,888, Cl. 372-29.000.
Nummy, Karen A.: *See*—
Blouse, Jeffrey L.; Fulton, Inge G.; Lange, Russell C.; Meyerson, Bernard S.; Nummy, Karen A.; Revitz, Martin; and Rosenberg, Robert, 5,008,207, Cl. 437-31.000.
Nuovopignone-Industrie Meccaniche e Fonderia, S.p.A.: *See*—
Corain, Luciano; Maitan, Gianni; Perlini, Renato; and Bacchetti, Mario, 5,007,463, Cl. 139-448.000.
Nurmi, Tom: *See*—
Unkuri, Matti; and Nurmi, Tom, 5,007,623, Cl. 270-39.000.
Nussbaum, Avraham, to Crestmoore Ltd. Depilatory device. 5,007,915, Cl. 606-133.000.
Nutto, Markus: *See*—
Hennings, Detlev; Hoffmann, Bernd F. W.; and Nutto, Markus, 5,008,646, Cl. 338-20.000.
N.V. Nederlandsche Apparatenfabriek Nedap: *See*—
de Jong, Hendrik J., 5,008,660, Cl. 340-825.540.
Nyberg, Eric D.; Klingman, Ken A.; Curtis, Jeff; and Stewart, Ray F., to Raychem Corporation. Method and articles employing ion exchange material. 5,007,989, Cl. 204-1.110.
Nyeki, Olga: *See*—
Schon, Istvan; Nyeki, Olga; Kisfaludy, Lajos, deceased; Denes, Laszlo; Hajos, Gyorgy; and Szporny, Laszlo, 5,008,2·6, Cl. 514-18.000.
O. Ames Co.: *See*—
Spear, Kenneth J.; and Fowler, Ronald R., 5,007,598, Cl. 242-86.200.
Oare, Thomas R.: *See*—
Maathuis, Antonnis G.; Spielmann, Jurgen; Beer, Klaus; and Oare, Thomas R., 5,007,974, Cl. 156-117.000.
Oberdorfer, Dietmar: *See*—
Hermsdorffer, Joachim; Galfe, Gunther; Lautenbacher, Stefan; Korte, Reinhard; Krause, Hans-Joachim; Krull, Frans; May, Arno; Oberdorfer, Dietmar; and Pluquett, Ulrich, 5,007,433, Cl. 128-742.000.
Oberman, Richard A.: *See*—
Gawrys, George W.; Oberman, Richard A.; and Willcock, William T., 5,008,930, Cl. 379-210.000.
Obregon, Carlos D.: *See*—
Hanke, Carl C.; Obregon, Carlos D.; and Atriss, Ahmad H., 5,008,635, Cl. 331-1.00A.
O'Brien, Steven T.; and Kakuk, Jay J., to Toro Company, The. Cable connector. 5,007,855, Cl. 439-411.000.
Occidental Chemical Corporation: *See*—
Lee, Chung J., 5,008,361, Cl. 528-26.000.
Ochi, Katsura; Oonishi, Yasuaki; and Kinsen, Kazuhisa, to Nippon Carbide Kogyo Kabushiki Kaisha. Pressure-sensitive adhesive layer. 5,008,139, Cl. 428-40.000.
O'Connor, Joseph G.: *See*—
Liang, Rong-Chang; Kintz, Karl A.; O'Connor, Joseph G.; and Adair, Paul C., 5,008,237, Cl. 503-212.000.
O'Connor, Lawrence T.: *See*—
Emmett, Robert C., Jr.; and O'Connor, Lawrence T., 5,007,620, Cl. 266-168.000.
Ocular Instruments, Inc.: *See*—
Erickson, Phillip J.; Crossman, Janet L.; Heacock, Gregory L.; and Mainster, Martin A., 5,007,729, Cl. 351-219.000.
Odaka, Yoshiyuki: *See*—
Hiratsuka, Katsuo; Odaka, Yoshiyuki; and Yoshida, Takeshi, 5,007,356, Cl. 112-68.000.
Odani, Noboru: *See*—
Mikamo, Hisanobu; Odani, Noboru; and Shimizu, Akio, 5,008,152, Cl. 428-423.100.
O'Dea, Kevin J.; Bergman, Norman J.; Digiulio, Peter C.; Dolan, Donald T.; and Vanderpool, James L., to Pitney Bowes Inc. Control system for moistener. 5,007,371, Cl. 118-680.000.
O'Donnell, John: *See*—
Carr, Michael D.; Perini, Maurice G.; O'Donnell, John; Leaning, Anthony B.; and Leaning, Anthony R., 5,008,748, Cl. 358-136.000.
Oeda, Yoshitaka: *See*—
Yoshizawa, Katsuaki; and Oeda, Yoshitaka, 5,008,231, Cl. 503-207.000.
O'Garr, Phil. Method and apparatus for charging waterlogged boreholes with explosives. 5,007,345, Cl. 102-313.000.

Ogawa, Kazufumi, to Matsushita Electric Industrial Co., Ltd. Process for the production of a highly-orientated ultralong conjugated polymer. 5,008,127, Cl. 427-36.000.
Ogawa, Toru: *See*—
Yazawa, Shigehiko; Ogawa, Toru; Moritomo, Haruo; Suya, Yoshiaki; and Nakayama, Mikio, 5,008,884, Cl. 370-110.100.
Ogawa, Toshitaka: *See*—
Onose, Tsukasa; Kikuchi, Yasuo; Ogawa, Toshitaka; and Seino, Minoru, 5,008,716, Cl. 355-322.000.
Ogihara, Takashi: *See*—
Yamamura, Yoshihiro; Ogihara, Takashi; Nakanishi, Yoshinobu; and Nishizono, Tomohiro, 5,008,937, Cl. 380-50.000.
Ogilvy, James W.: *See*—
Gooch, William A., Jr.; Burkins, Matthew S.; Mills, Leo F.; Ogilvy, James W.; and Ricchiazzi, Antonio J., 5,007,326, Cl. 89-36.020.
Oguchi, Yoshiharu: *See*—
Ikuzawa, Masanori; Oguchi, Yoshiharu; Matsunaga, Kenichi; Toyoda, Noriyuki; Furusho, Takao; Fujii, Takayoshi; and Yoshikumi, Chikao, 5,008,243, Cl. 514-8.000.
Ogura, Takashi: *See*—
Ino, Kazuo; Shimizu, Yoshiaki; Okuda, Hiroyuki; Ishihara, Kousou; and Ogura, Takashi, 5,007,158, Cl. 29-603.000.
O'Halloran, Michael L.: *See*—
Nickel, Dwight E.; O'Halloran, Michael L.; and Case, Cecil L., 5,007,235, Cl. 56-12.400.
Ohara, Tsunemasa; and Shibanai, Tomoo, to Canon Kabushiki Kaisha. Electric driving device capable of eliminating backlash. 5,008,605, Cl. 318-630.000.
Ohashi, Takashi: *See*—
Maruyama, Akihiro; Kato, Munehiko; Ishiwaka, Takumi; Seki, Katsuto; and Ohashi, Takashi, 5,008,297, Cl. 521-136.000.
Ohashi, Yoshio: *See*—
Kitamura, Toru; Ohashi, Yoshio; Sekino, Masami; and Murakawa, Kenichi, 5,008,001, Cl. 208-143.000.
Ohba, Motoi; Yabuki, Hiroyuki; and Makimoto, Mitsuo, to Matsushita Electric Industrial Co., Ltd. Frequency synthesizer. 5,008,629, Cl. 328-14.000.
Ohbayashi Corporation: *See*—
Itami, Takashi; Yuri, Tadao; and Aoyagi, Toru, 5,007,214, Cl. 52-66.000.
Ohio State University Research Foundation: *See*—
Minton, John P.; Webb, Thomas E.; and Abou-Issa, Hussein M., 5,008,291, Cl. 514-578.000.
Ohkase, Wataru: *See*—
Asano, Takanobu; Yamaga, Kenichi; and Ohkase, Wataru, 5,007,788, Cl. 414-417.000.
Ohki, Hiroshi; Kamohara, Hideaki; and Miyake, Ryo, to Hitachi, Ltd. Flow-cell device. 5,007,732, Cl. 356-73.000.
Ohki, Hiroshi; Kobayashi, Shoei; and Wada, Takuya, to Sony Corporation. Reproducing apparatus for an optical recording medium. 5,008,521, Cl. 235-454.000.
Ohmori, Hiroyuki; Tanaka, Hisami; and Okunuki, Masami, to Canon Kabushiki Kaisha. Electrophotographic apparatus. 5,008,706, Cl. 355-219.000.
Ohmura, Hiroshi; Tanabe, Satoru; Yoshioka, Junji; and Kanazawa, Hirotaka, to Mazda Motor Corporation. Rear wheel turning system. 5,007,494, Cl. 180-79.100.
Ohno, Kenyu: *See*—
Sano, Hironari; and Ohno, Kenyu, 5,008,332, Cl. 525-92.000.
Ohno, Shigeru: *See*—
Goda, Kensuke; and Ohno, Shigeru, 5,008,177, Cl. 430-522.000.
Ohno, Yoshio: *See*—
Nagai, Tetsuji; Torii, Katura; and Ohno, Yoshio, 5,008,842, Cl. 364-551.010.
Ohsawa, Hidefumi: *See*—
Katayama, Akihiro; and Ohsawa, Hidefumi, 5,008,950, Cl. 382-50.000.
Ohshima, Kohichi: *See*—
Rokutanzono, Takashi; Ide, Yukio; Nagame, Hiroshi; Ohshima, Kohichi; Kojima, Narihito; and Nousho, Shinji, 5,008,172, Cl. 430-67.000.
Ohta, Eiichi: *See*—
Kondo, Hitoshi; Ohta, Eiichi; and Kimura, Yuji, 5,008,732, Cl. 357-71.000.
Ohta, Shigeo: *See*—
Nishiuchi, Shohachi; Ohta, Shigeo; Imai, Hitoshi; and Meguro, Haruo, 5,007,266, Cl. 72-44.000.
Ohtaka, Mitsumasa: *See*—
Washizu, Katsushi; and Ohtaka, Mitsumasa, 5,007,267, Cl. 72-59.000.
Ohtani, Mitsuaki: *See*—
Narisada, Masayuki; Ohtani, Mitsuaki; Watanabe, Fumihiko; and Kawata, Kyozo, 5,008,409, Cl. 549-463.000.
Ohtsuka, Yoshimichi: *See*—
Kitaura, Hiromu; Isobe, Mitsuo; Kawahara, Isao; Hirauchi, Yoshio; Ninomiya, Yuichi; Ohtsuka, Yoshimichi; and Izumi, Yoshinori, 5,008,753, Cl. 358-171.000.
Oi, Satoru: *See*—
Hatanaka, Chitoshi; and Oi, Satoru, 5,008,405, Cl. 549-315.000.
Oji Paper Co., Ltd.: *See*—
Takahashi, Yoshiyuki; Toyofuku, Kunitaka; and Iwasaki, Akiko, 5,008,236, Cl. 503-209.000.
Ojima, Takahiro: *See*—
Abe, Takafumi; Uchiyama, Seiji; Ojima, Takahiro; and Kida, Koichi, 5,008,479, Cl. 585-320.000.
Okabayashi, Katsuaki: *See*—
Minoura, Jun; Takahahi, Shigeyuki; Kato, Hisaki; Ito, Toshiyasu; Mori, Takaaki; Kato, Mamoru; Shimada, Junichi; and Okabayashi, Katsuaki, 5,007,718, Cl. 350-357.000.
Okabe, Akio: *See*—
Nishino, Hoyoku; Iwasaki, Ryozo; Okabe, Akio; and Yogo, Yuki, 5,008,295, Cl. 514-766.000.
Okabe, Sakiichi: *See*—
Masuda, Takeshi; Yagi, Susumu; Okabe, Sakiichi; Kamishima, Yoichi; and Kawagoe, Kazuo, 5,008,580, Cl. 310-321.000.
Okada, Minoru: *See*—
Kumada, Akio; Iochi, Takahiko; and Okada, Minoru, 5,008,581, Cl. 310-323.000.
Okamoto, Tsugio, to Brother Kogyo Kabushiki Kaisha. Color image recording apparatus using intermediate image sheet. 5,008,700, Cl. 355-27.000.
Okamura, Moriyuki; Nakajima, Ikuo; and Nishiguchi, Toshiji, to Canon Kabushiki Kaisha. Intraocular implant having coating layer. 5,007,928, Cl. 623-6.000.
Okazaki, Masaki: *See*—
Ikegawa, Akihiko; Okazaki, Masaki; and Sugimoto, Tadao, 5,008,181, Cl. 430-572.000.
Okazaki, Takao; Takahashi, Shuji; Iwado, Seigo; Tanaka, Keiji; Yanai, Toshiaki; and Kajino, Hisaki, to Sankyo Company Limited. Macrolide compounds, their preparation and their use. 5,008,191, Cl. 435-124.000.
Okita, Ryozo, to Sanshin Industries Co., Ltd. Trimming/tilting system for marine propulsion unit. 5,007,866, Cl. 440-61.000.
Okubo, Susumu; and Sasaki, Yutaka, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Jet propulsion craft provided with exhaust noise elimipating apparatus. 5,007,870, Cl. 440-89.000.
Okuda, Hiroyuki: *See*—
Ino, Kazuo; Shimizu, Yoshiaki; Okuda, Hiroyuki; Ishihara, Kousou; and Ogura, Takashi, 5,007,158, Cl. 29-603.000.
Okumoto, Takaharu; Nishimoto, Tatsuo; and Wakaki, Hideaki, to Yokohama Rubber Co., Ltd., The. Golf club head. 5,007,643, Cl. 273-167.00R.
Okumura, Kin-ichi; Chono, Koji; Ozeki, Hiroshi; and Hamada, Tadao, to Nippon Zeon Co., Ltd. Reaction injection molding method. 5,008,065, Cl. 264-328.600.
Okunuki, Masami: *See*—
Ohmori, Hiroyuki; Tanaka, Hisami; and Okunuki, Masami, 5,008,706, Cl. 355-219.000.
Okuyama, Toshiharu: *See*—
Wakatsuki, Yoshio; Okuyama, Toshiharu; Takeuchi, Hajime; Shimizu, Misao; and Shimizu, Giichiro, 5,008,665, Cl. 340-870.260.
Okuzumi, Hiroshi, to Nissan Motor Co., Ltd. Variable inertial mass flywheel. 5,007,303, Cl. 74-573.00F.
Olanders, Par: *See*—
Johansson, Goran; and Olanders, Par, 5,008,076, Cl. 422-28.000.
Oldemeyer, Wilhelm: *See*—
Risius, Harald; and Oldemeyer, Wilhelm, 5,008,057, Cl. 264-134.000.
Oldfelt, Sven; and Stahl, Gary L., to Oy Wartsila AB. Vacuum toilet system with simultaneous rinse and discharge. 5,007,117, Cl. 4-432.000.
Olin Corporation: *See*—
Day, Roger W.; and Hani, Rahim, 5,008,443, Cl. 560-169.000.
Olinger, Harvey A., to Advanced Commercial Products, Inc. Filling device for liquid filled tires. 5,007,448, Cl. 137-223.000.
Olney, Robert S.: *See*—
Trapp, Richard E.; Hansen, Gary L.; Clay, Robert B.; Dubetsky, Lawrence J.; and Olney, Robert S., 5,007,973, Cl. 149-109.600.
Olsen, Axel. Casing system for the laying of electrical supply conductors. 5,007,853, Cl. 439-211.000.
Olsen, Steven A.; Cronin, William J.; Jarvis, Ben L.; and McMillan, Jeff G., to U.S. Intelco Networks, Inc. Billing system for telephone signaling network. 5,008,929, Cl. 379-112.000.
Olson Manufacturing Co.: *See*—
Mahaney, John C., 5,007,258, Cl. 70-159.000.
Oltz, Eugene M.: *See*—
Nakanishi, Koji; Oltz, Eugene M.; and Grunberger, Dezider, 5,008,441, Cl. 560-75.000.
Olympus Optical Co., Ltd.: *See*—
Hasegawa, Akira, 5,007,719, Cl. 350-425.000.
Ieoka, Shouichi, 5,007,408, Cl. 128-6.000.
Nishigaki, Shinichi; and Bito, Shiro, 5,007,907, Cl. 606-46.000.
Takahashi, Yasuo; Suzuki, Kazuo; Niimura, Toshinobu; and Kano, Tokio, 5,007,995, Cl. 204-299.00R.
Omron Tateisi Electronics Co.: *See*—
Nakamura, Arata, 5,008,529, Cl. 250-221.000.
Shimamoto, Hiroshi; Suzaki, Hideyuki; Yamaguchi, Yukio; and Kawano, Atsushi, 5,008,862, Cl. 367-105.000.
Yonezawa, Tatsushi; and Nozoe, Satosi, 5,008,534, Cl. 250-229.000.
Omura, Satoshi; and Itoh, Zen, to Kitasato Kenkyusho. Therapeutic method of stimulating digestive tract contractile motion in mammals. 5,008,249, Cl. 514-29.000.
Onco-Pharm Development AG: *See*—
Monti, Sergio, 5,008,287, Cl. 514-492.000.
Onda, Kenichi: *See*—
Miyazaki, Hideki; Kanouda, Akihiko; Onda, Kenichi; and Matsuda, Yasuo, 5,008,586, Cl. 323-315.000.
Onda, Yoshiro: *See*—
Kokubo, Hiroyasu; Sekigawa, Fujio; Chiba, Tohru; and Onda, Yoshiro, 5,008,113, Cl. 424-480.000.

Ono, Kikuo: *See*—
Kawachi, Genshiro; Mimura, Akio; Konishi, Nobutake; Ono, Kikuo; and Suzuki, Takashi, 5,008,218, Cl. 437-201.000.
Ono, Masato: *See*—
Karakida, Kenichi; Yagi, Shigeru; Fukuda, Yuzuru; Nishikawa, Masayuki; Roh, Te N.; Takahashi, Noriyoshi; Ono, Masato; Yokoi, Masaki; and Komori, Yumiko, 5,008,170, Cl. 430-65.000.
Ono, Shoichi; and Kobayashi, Atsuhito, to Chinon Kabushiki Kaisha. Pulsed light identifying system. 5,008,531, Cl. 250-222.100.
Ono, Shoichi; and Kobayashi, Atsuhito, to Chinon Kabushiki Kaisha. Light reception signal circuit for photoelectric switch. 5,008,532, Cl. 250-222.100.
Ono, Takashi: *See*—
Yamazaki, Shuntaro; Ono, Takashi; and Shimizu, Haruhito, 5,007,693, Cl. 350-96.130.
Ono, Takeshi; Sakamoto, Masahiro; and Takano, Tadashi, to Canon Kabushiki Kaisha. Driving system for stepping motor. 5,008,607, Cl. 318-696.000.
Ono, Tomio: *See*—
Tanuma, Chiaki; Itsumi, Kazuhiro; Iwase, Nobuo; Ono, Tomio; Kondo, Yuu; and Saito, Kazutaka, 5,008,582, Cl. 310-332.000.
Onose, Tsukasa; Kikuchi, Yasuo; Ogawa, Toshitaka; and Seino, Minoru, to Hitachi Koki Co., Ltd. Paper cooling apparatus for an electrophotographic printer. 5,008,716, Cl. 355-322.000.
Oonishi, Yasuaki: *See*—
Ochi, Katsura; Oonishi, Yasuaki; and Kinsen, Kazuhisa, 5,008,139, Cl. 428-40.000.
Oppedal, Magne: *See*—
Legris, Bernard; Oppedal, Magne; and Traonmilin, Eric, 5,007,769, Cl. 405-195.000.
Oppendahl, Carl. Voice-activated radio transceiver. 5,008,954, Cl. 455-79.000.
Oprea, John C., to Durakon Industries, Inc. Under the rail liner with tabs. 5,007,671, Cl. 296-39.200.
Orbits, Dave: *See*—
Bhandarkar, Dileep P.; Cutler, Dave; Cardoza, Wayne; Witek, Rich; and Orbits, Dave, 5,008,812, Cl. 364-200.000.
Orbot Systems Ltd.: *See*—
Katzir, Yigal; and Kochba, Joseph, 5,008,743, Cl. 358-101.000.
Orchid One Corporation: *See*—
Crewe, Albert V., 5,008,549, Cl. 250-396.0ML.
Ori, Takaaki: *See*—
Kumita, Norio; Yamamoto, Takaaki; Narita, Seiichi; and Ori, Takaaki, 5,008,501, Cl. 200-61.45R.
Originations Limited: *See*—
Kelly, Nigel B., 5,007,268, Cl. 72-76.000.
Orleander S.A.: *See*—
Brunt, Chris; and Carner, Don C., Jr., 5,008,647, Cl. 340-432.000.
Orman, Charles R.; Johnson, Paul E.; and Adams, Bruce C., to Sunkist Growers, Inc. Apparatus for treating fresh fruit and the like to prevent and retard the growth off fungus. 5,007,335, Cl. 99-487.000.
Orndorff, Roy L., Jr.; and Bono, Mark J., to B. F. Goodrich Company, The. Suspension system. 5,007,660, Cl. 280-715.000.
Ornholmer, Lars: *See*—
Gustafsson, Par; Sobel, Jarl; and Ornholmer, Lars, 5,007,295, Cl. 73-862.690.
Oroskar, Anil R.; and Johnson, James L., to UOP. Enhanced membrane separation of monosaccharides utilizing concentration polarization. 5,008,189, Cl. 435-105.000.
Orr, William H.: *See*—
Harris, Dawn E.; and Orr, William H., 5,007,520, Cl. 194-317.000.
Ortiz, Paul W.: *See*—
Ketcham, Stephen O.; Ortiz, Paul W.; Jarvis, Jamie S.; and McCray, Clyde S., 5,007,316, Cl. 83-167.000.
Osanai, Yasuhiro: *See*—
Nakamura, Takashi; Tanaka, Haruhiko; Hyodo, Touru; and Osanai, Yasuhiro, 5,008,601, Cl. 318-268.000.
Osborn, Thomas W., III; and Schmitz, Deborah C., to Procter & Gamble Company, The. Decoupled sanitary napkin. 5,007,906, Cl. 604-385.100.
Osborne, Timothy W., to Union Carbide Corporation. Boron nitride coatings. 5,007,962, Cl. 106-38.220.
Osentowski, Timothy D.: *See*—
Fletcher, Robert M.; Kuo, Chihping; Osentowski, Timothy D.; and Robbins, Virginia M., 5,008,718, Cl. 357-17.000.
Osgood Industries, Inc.: *See*—
Mueller, Martin J.; Mueller, Martin; and Weingandt, Michael A., 5,007,466, Cl. 141-1.000.
Oshida, Yoshitada: *See*—
Tanaka, Tsutomu; Oshida, Yoshitada; Shiba, Masataka; Nakashima, Naoto; and Funatsu, Ryuichi, 5,008,702, Cl. 355-52.000.
Osteonics Corp.: *See*—
Sidebotham, Christopher G.; McNulty, Donald E.; and Lombardo, Alan M., 5,007,933, Cl. 623-20.000.
Osther, Kurt B., to Bio-Research Laboratories, Inc. Assay system for detecting antibody and a method of producing non-human immune antibody. 5,008,183, Cl. 435-5.000.
Ostrander, Robert J., to Dana Corporation. Bi-directional back stopping clutch. 5,007,511, Cl. 192-8.00R.
Otis Engineering Corporation: *See*—
Pleasants, Charles W.; and Scott, Keith W., 5,007,479, Cl. 166-178.000.
O'Toole, John R.: *See*—
Lee, Ho C.; O'Toole, John R.; Shalkey, Alex T.; and Zable, Jack L., 5,007,748, Cl. 400-103.000.
Otsuka Pharmaceutical Co., Ltd.: *See*—
Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu; Hong, Yeong-Man; Kawai, Kazuyoshi; Takegata, Setsuko; Ishii, Kiyoshi; Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,008,374, Cl. 530-351.000.
Nishi, Takao; Uno, Tetsuyuki; Koga, Yasuo; and Chu, Gil-Namg, 5,008,274, Cl. 514-312.000.
Otteman, John H. Linear actuator. 5,007,328, Cl. 92-63.000.
Otto, Donald V., to Unisearch Systems Limited. Current sensor. 5,008,612, Cl. 324-117.00R.
Ouchi, Teruo: *See*—
Takahashi, Nagashige; and Ouchi, Teruo, 5,007,406, Cl. 128-4.000.
Ouchi, Yasuhide: *See*—
Nishiyama, Nobumasa; Saito, Makoto; Ouchi, Yasuhide; Katoh, Yasuhiro; Kamo, Yoshihisa; Koizumi, Makoto; Aoi, Hajime; Sato, Naoki; and Tsuchiya, Reijiro, 5,008,761, Cl. 360-45.000.
Ouellet, Wilfred P., to L.K. Goodwin Co., Inc. Inflatable dock seal. 5,007,211, Cl. 52-2.120.
Outboard Marine Corporation: *See*—
Broughton, George L.; Breckenfeld, Paul W.; Mate, David W.; Nettles, James A.; and Rogers, Duane E., 5,007,393, Cl. 123-195.00R.
Overall, Robert E.: *See*—
Myers, Robert I.; Brubaker, Bryce D.; and Overall, Robert E., 5,007,236, Cl. 60-256.000.
Oversluizen, Gerrit: *See*—
Huisman, Frederikus R. J.; Oversluizen, Gerrit; and Martens, Jan W. D., 5,008,590, Cl. 313-500.000.
Overton, William C., Jr.; van Hulsteyn, David B.; and Flynn, Edward R., to United States of America, Energy. Superconductive imaging surface magnetometer. 5,008,622, Cl. 324-248.000.
Owenby, Daniel B., to Beacon Manufacturing Company. Blanket having improved thermal characteristics in the portion covering the feet. 5,007,125, Cl. 5-486.000.
Owens-Corning Fiberglas Corporation: *See*—
Bakhshi, Shiv K., 5,008,131, Cl. 427-209.000.
Oxford, Alexander W.: *See*—
Coates, Ian H.; Oxford, Alexander W.; and North, Peter C., 5,008,272, Cl. 514-292.000.
Oxford Gene Systems Limited: *See*—
Kingsman, Alan J.; Kingsman, Susan M.; Adams, Sally E.; Mellor, Elizabeth J. C.; and Malim, Michael H., 5,008,373, Cl. 530-350.000.
Oy Partek AB: *See*—
Unkuri, Matti; and Nurmi, Tom, 5,007,623, Cl. 270-39.000.
Oy Santasalo-Sohlberg AB: *See*—
Wutzler, Peter; Mucke, Horst; and Santasalo, Lauri, 5,008,079, Cl. 422-28.000.
Oy Tampella AB: *See*—
Uppstu, Erik, 5,007,354, Cl. 110-238.000.
Oy Wartsila AB: *See*—
Oldfelt, Sven; and Stahl, Gary L., 5,007,117, Cl. 4-432.000.
Ozaki, Nozomu: *See*—
Miida, Takashi; Ozaki, Nozomu; Baba, Shigenori; and Kousaka, Kunimitsu, 5,008,696, Cl. 354-408.000.
Ozaki, Seishiro; Asahi, Nobuo; and Ebisawa, Tsuneo, to Fuji Electric Co., Ltd. Switching mechanism in circuit breaker. 5,008,504, Cl. 200-401.000.
Ozawa, Kunitaka: *See*—
Kawakami, Eigo; Ozawa, Kunitaka; Uda, Koji; Shimoda, Isamu; and Uzawa, Shunichi, 5,008,703, Cl. 355-53.000.
Ozawa, Makoto; Hirama, Yasuo; and Mizuno, Shyuzi, to Ikeda Bussan Co., Ltd.; and Nissan Shatai Company, Limited. Vehicular seat lumbar support device. 5,007,677, Cl. 297-284.000.
Ozawa, Michihiro: *See*—
Aoyama, Motoo; Koyama, Junichi; Uchikawa, Sadao; Bessho, Yasunori; Ozawa, Michihiro; Nakamura, Mitsunari; Nakajima, Akinobu; and Maruyama, Hiromi, 5,008,070, Cl. 376-419.000.
Ozawa, Mituharu: *See*—
Kamata, Yoshiharu; Nagatsuma, Nobuyoshi; Ozawa, Mituharu; and Yoshioka, Hiroshi, 5,007,154, Cl. 29-430.000.
Ozawa, Takashi; and Nada, Minoru, to Canon Kabushiki Kaisha. Sheet conveying apparatus and sheet conveying method. 5,008,713, Cl. 355-319.000.
Ozeki, Hiroshi: *See*—
Okumura, Kin-ichi; Chono, Koji; Ozeki, Hiroshi; and Hamada, Tadao, 5,008,065, Cl. 264-328.600.
Ozin, Geoffrey A.; Huber, Helmut X.; Prokopowicz, Richard A.; and Godber, John, to Canada, Her Majesty the Queen in the right of, as represented by the Minister of Energy Mines and Resources. Process for the preparation of catalytic metal clusters. 5,008,234, Cl. 502-326.000.
Paar, Willibald, to Vianova Kunstharz, A.G. Reacting epoxy resin and substituted urea or biuret with blocked isocyanate group dicarboxylic anhydride compound product. 5,008,351, Cl. 525-528.000.
Pace, Sang H. L. Permanent magnet motor having diverting magnets. 5,008,578, Cl. 310-256.000.
Pacific Scientific Company: *See*—
Marshall, James W.; Gotchy, David; Uffelman, Bradley L.; Leimbach, Wendell B.; and Wilhelmi, Albert A., 5,008,572, Cl. 310-45.000.
Sommer, Holger T., 5,007,297, Cl. 73-865.500.
Paciullo, Francis P., to Colgate-Palmolive Co. Litter box envelopes. 5,007,375, Cl. 119-170.000.
Pagani, David A. Game apparatus. 5,007,636, Cl. 273-448.000.

Painter, Michael A. Vehicle wheel mounting apparatus. 5,007,789, Cl. 414-427.000.

Palara, Sergio, to SGS-Thomson Microelectronics S.r.l. Diagnostic circuit for units providing current control and protection against excessive heat dissipation for semiconductor power devices. 5,008,771, Cl. 361-103.000.

Palinkas, John M., to Electronic Research Associates, Inc. Multi-color illumination apparatus. 5,008,788, Cl. 362-231.000.

Palladini, Mario: *See*—
Bovisio, Cipriano; Foglieni, Carlo; Fumagalli, Fulgenzio; Morlotti, Norberto; and Palladini, Mario, 5,007,665, Cl. 285-334.000.

Palladino, Gaetano; MacDonald, Peter; and Bigatti, Ettore, to Sicor Societa 'Italiana Corticosteroidi S.p.A. Process for the conversion of daunorubicin into doxorubicin. 5,008,380, Cl. 536-6.400.

Palm, Bernhard, to Milwaukee Electric Tool Corporation. Quick change guide shoe. 5,007,172, Cl. 30-377.000.

Palmer, James T., to Marion Laboratories, Inc. 2-hydroxy-3-(4-methoxyphenyl)-3-(2-aminophenylthio)propionic acid, 8'-phenylmenthyl ester, especially for diltiazem. 5,008,433, Cl. 560-17.000.

Palmer, Larry R.; Collins, Joseph M.; and Holloway, Gary M. Safety system for boats in dry storage. 5,008,667, Cl. 340-984.000.

Pan, Alfred I-Tsung; Hanson, Eric G.; Schantz, Christopher A.; and Childers, Winthrop D., to Hewlett-Packard Company. Plastic substrate for thermal ink jet printer. 5,008,689, Cl. 346-140.00R.

Pansari, Frank, Jr.: *See*—
Quinn, Robert L.; and Pansari, Frank, Jr., 5,007,280, Cl. 72-402.000.

Pantigny, Philippe: *See*—
Nicolas, Pierre; and Pantigny, Philippe, 5,008,544, Cl. 250-349.000.

Pantzar, Glenn G. E., to Sandvik AB. Cutting insert for chip removing machining. 5,007,775, Cl. 407-113.000.

Paolo, Bizzarri, to Gordon S.n.C. di Bizzarri Paolo e C. Hydrobrush with speed-reducer of the epicyclic type. 5,007,127, Cl. 15-29.000.

Paramount Bed Co., Ltd.: *See*—
Shinozuka, Tokihito, 5,008,141, Cl. 428-182.000.

Parekh, Dilip J.: *See*—
Weiss, Lawrence D.; Caruthers, Douglas W.; Inatomi, Charles T.; Kawan, Joseph C.; Lee, Shan; Marks, Harvey; Meguerdijan, Sarkis A.; Parekh, Dilip J.; Samulon, Alfred S.; Takata, Melvin M.; Tucci, Morris L.; and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.

Parekh, Ebrahim: *See*—
Jensen, Jack E.; and Parekh, Ebrahim, 5,007,781, Cl. 411-337.000.

Parent, Donald G.: *See*—
Swanson, Ralph W.; Gagnon, Daniel F.; and Parent, Donald G., 5,008,594, Cl. 315-111.810.

Paris, Rene: *See*—
Samdi, Azzdddine; Paris, Rene; and Roubin, Marc, 5,008,092, Cl. 423-263.000.

Park, Chung: *See*—
Lee, Sae Bae; Won, Chan H.; Park, Chung; and Lim, Bun S., 5,008,190, Cl. 435-108.000.

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Kremers, Henry T.; and Rabb, Khalid M., 5,007,625, Cl. 270-53.000.
Raburn, Richard W.; and Schaefer, Daniel J., to Span-America Medical Systems, Inc. Support pad with uniform patterned surface. 5,007,124, Cl. 5-481.000.
Rad Elec Inc.: *See—*
Dempsey, John C., 5,008,540, Cl. 250-336.100.
Radcliffe, Stanley L.: *See—*
Alexander, Joseph H.; Radcliffe, Stanley L.; Robertson, Martin N.; Bator, Eugene A.; and Anderson, John E., 5,007,315, Cl. 83-72.000.
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Krushinski, Bert K.; Lawhon, Robert A.; Radecki, Francis A.; and Schwenninger, Ronald L., 5,007,950, Cl. 65-182.500.
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Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponacz, Anna; Eifert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo ; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.
Rager, Shirley J.: *See—*
Matteucci, Lawrence A.; Rager, Shirley J.; and Maher, Ambrose P., 5,007,367, Cl. 116-210.000.
Rahner, Thomas. Portable lace clipping and shearing apparatus for synchronous operation with a lace-knitting machine. 5,007,253, Cl. 66-149.00R.
Raible, Karl, to Stabifix Brauerei-Technik GmbH & Co. OHG. Process for the reduction in size of the pores of a filter medium for beverages. 5,008,018, Cl. 210-717.000.
Raj, Phani K. Electronic remote chemical identification system. 5,008,661, Cl. 340-825.540.
Raleigh, William J.; Thimineur, Raymond J.; and Zotto, Anthony A., to General Electric Company. Silicone surfactants. 5,008,103, Cl. 424-66.000.
Ralph E. Koch Trucking, Inc.: *See—*
Koch, Ralph E., 5,007,672, Cl. 296-100.000.
Ram, Michael J.: *See—*
Kalb, Irvin M.; and Ram, Michael J., 5,007,897, Cl. 604-43.000.
Ramachandran, Ramakrishnan; MacLean, Donald L.; and Satchell, Donald P., Jr., to BOC Group, Inc., The. Process for the production of oxides. 5,008,412, Cl. 549-523.000.
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Ramsey, James S.: *See—*
Georgiou, John; Gueth, Thomas F.; and Ramsey, James S 5,008,520, Cl. 235-462.000.
Ranch, Jerome P.; and Buchheim, Julie A., to United AgriSeeds, Inc. Propagating multiple whole fertile plants from immature leguminous. 5,008,200, Cl. 435-240.490.
Rancourt, James D.: *See—*
Boling, Norman L.; Mayer, Thomas; and Rancourt, James D., 5,008,129, Cl. 427-160.000.
Randolph, Timothy T. Phosphorescent luminous door knobs cover. 5,008,551, Cl. 250-462.100.
Rao, Nandakumar S.: *See—*
Cook, William J.; Wisniewski, Karen L.; Dixit, Nagaraj S.; and Rao, Nandakumar S., 5,008,030, Cl. 252-106.000.
Rao, V. N. Mallikarjuna: *See—*
Manzer, Leo E.; and Rao, V. N. Mallikarjuna, 5,008,475, Cl. 570-168.000.
Manzer, Leo E.; and Rao, V. N. Mallikarjuna, 5,008,476, Cl. 570-176.000.
Rapoport, Judith L.: *See—*
Swedo, Susan E.; Rapoport, Judith L.; and Leonard, Henrietta L., 5,008,262, Cl. 514-217.000.
Rastetter, William H.: *See—*
Anderson, Stephen; Light, David R.; Marks, Cara; and Rastetter, William H., 5,008,193, Cl. 435-138.000.

Rathge, Robert D.: *See—*
Schlie, LaVerne A.; and Rathge, Robert D., 5,008,593, Cl. 315-39.000.
Rathmann, Dietrich: *See—*
Thurm, Siegfried; Holm, Reimer; Leuschke, Christian; Rathmann, Dietrich; and Schrader, Lutz, 5,008,148, Cl. 428-336.000.
Raubenheimer, Hans-Juergen: *See—*
Diessel, Paul; Perner, Johannes; Denzinger, Walter; Hartmann, Heinrich; and Raubenheimer, Hans-Juergen, 5,008,032, Cl. 252-174.240.
Rauchmaul, Siegfried: *See—*
Schmidt, Hans-Fr.; Rauchmaul, Siegfried; and Bednarz, Juergen, 5,008,496, Cl. 174-254.000.
Ravid, Gonen. Specialized frame for retaining an edge connector on a printed circuit board. 5,007,846, Cl. 439-79.000.
Ray, Daniel L., to Level One Communications, Inc. Fully integrated charge pump phase locked loop. 5,008,637, Cl. 331-8.000.
Raychem Corporation: *See—*
Guerra, Robert; and Soni, Pravin, 5,008,340, Cl. 525-193.000.
Levinson, Frank H., 5,008,877, Cl. 370-4.000.
Nyberg, Eric D.; Klingman, Ken A.; Curtis, Jeff; and Stewart, Ray F., 5,007,989, Cl. 204-1.110.
Raymond, Guy: *See—*
Chevalier, Jean-Claude; and Raymond, Guy, 5,007,131, Cl. 15-250.190.
Raymond, Harry W. Foamed building panel including an internally mounted stud. 5,007,222, Cl. 35-586.000.
Raytheon Company: *See—*
Cavallaro, Nunzio M.; Toth, John F.; and Alexander, Cleo J., 5,008,681, Cl. 343-700.0MS.
Cheriff, Frank J.; Kirk, Joseph J.; Pulver, Arnold M.; and Cox, Walter N., 5,008,656, Cl. 340-718.000.
Wolfe, Robert E.; and Goyette, Ronald A., 5,007,254, Cl. 68-17.00R.
Real, Kenneth G.; and Bang, Gary M., to Precor Incorporated. Exercise treadmill. 5,007,630, Cl. 272-69.000.
Real World Design & Development Company: *See—*
Ellard, Terence R., 5,007,903, Cl. 604-195.000.
Recytec SA: *See—*
Hanulik, Jozef, 5,008,044, Cl. 252-628.000.
Redditt, Jack W.: *See—*
Weder, Donald E.; Straeter, William F.; Straeter, Joseph G.; Craig, Franklin J.; Donnelly, Wilma M.; and Redditt, Jack W., 5,007,229, Cl. 53-397.000.
Redfield, John M.: *See—*
Robinson, Scott T.; Denning, William K.; Redfield, John M.; and Garthwaite, John H., 5,007,860, Cl. 439-540.000.
Redwine, Donald J., to Texas Instruments Incorporated. Method of making crosspoint dynamic RAM cell array with overlapping wordlines and folded bitlines. 5,008,214, Cl. 437-52.000.
Reed, Keith; and Coleman, Keith. Method of playing a board game of college social life. 5,007,650, Cl. 273-249.000.
Reese, Robert T.; and Stanley, Harold A., to Scripps Clinic and Research Foundation. Merozoite surface glycoproteins. 5,008,198, Cl. 435-240.270.
ReGen Corporation: *See—*
Stone, Kevin R., 5,007,934, Cl. 623-20.000.
Regener, Gernot: *See—*
Anapliotis, Emmanuel; Regener, Gernot; Ahrens, Uwe; and Jehle, Hermann, 5,007,910, Cl. 606-65.000.
Reichert, Gerhard: *See—*
Glover, Michael; and Reichert, Gerhard, 5,007,217, Cl. 52-172.000.
Reichwein, David P., to Armstrong World Industries, Inc. Consistency measuring device for a slurry containing defoamer. 5,008,906, Cl. 378-54.000.
Reid, Robert A.; and Goodnow, Ronald F., to Thermo-Electron Web Systems, Inc. Hydraulic drive for pull through doctor blade transfer system. 5,007,132, Cl. 15-256.530.
Reid, Robert W.: *See—*
Dahlen, John M.; Chhabra, Narender K.; Araujo, Richard K.; Scholten, James R.; Reid, Robert W.; and Soikkeli, Matti, 5,007,285, Cl. 73-170.00A.
Reimel, Paul F., to United States of America, Navy. Stationary probability integrator system. 5,008,630, Cl. 328-165.000.
Reist, Marc; Persson, Hans; and Poggi, Daniel, to Noranda Inc. Process for converting of solid high-grade copper matte. 5,007,959, Cl. 75-645.000.
Rembold, Manfred: *See—*
Husler, Rinaldo; Klingert, Bernd; Rembold, Manfred; and Steiner, Eginhard, 5,008,302, Cl. 522-14.000.
Remote Controls, Inc.: *See—*
Grove, Lee A., 5,007,446, Cl. 137-72.000.
Research Association for Petroleum Alternatives Development: *See—*
Kitamura, Toru; Ohashi, Yoshio; Sekino, Masami; and Murakawa, Kenichi, 5,008,001, Cl. 208-143.000.
Research Development Corporation: *See—*
Hattori, Shintarou; Takahagi, Takayuki; and Ishitani, Akira, 5,007,372, Cl. 118-715.000.
Resource Technology Associates: *See—*
Bain, Richard L.; and Larson, John R., 5,008,085, Cl. 422-109.000.
Reutter, Jorg; and Krause, Frank, to Alcatel N.V. Optical receiver with extended dynamic range. 5,008,524, Cl. 250-214.00A.
Revitz, Martin: *See—*
Blouse, Jeffrey L.; Fulton, Inge G.; Lange, Russell C.; Meyerson, Bernard S.; Nummy, Karen A.; Revitz, Martin; and Rosenberg, Robert, 5,008,207, Cl. 437-31.000.
Reynolds Metals Company: *See—*
Lee, Harry W., Jr., 5,008,533, Cl. 250-223.00B.
Rha, ChoKyun; Pradipasena, Pasawadee; Nakamura, TetsuHisa; Easson, Donald D., Jr.; and Sinskey, Anthony J., to Massachusetts Institute of Technology. Compositions utilizing an exocellular polysaccharide isolated from *Zoogloea ramigera*. 5,008,108, Cl. 424-401.000.
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Altorfer, Alfred; Wohler, Ernst; and Wynn, Nicholas P., 5,008,016, Cl. 210-634.000.
Boutin, Jean, 5,008,095, Cl. 423-467.000.
Samdi, Azzdddine; Paris, Rene; and Roubin, Marc, 5,008,092, Cl. 423-263.000.
Rhone-Poulenc Sante: *See—*
Gueremy, Claude; Jimonet, Patrick; and Mignani, Serge, 5,008,280, Cl. 514-367.000.
Ricchiazzi, Antonio J.: *See—*
Gooch, William A., Jr.; Burkins, Matthew S.; Mills, Leo F.; Ogilvy, James W.; and Ricchiazzi, Antonio J., 5,007,326, Cl. 89-36.020.
Rice, Kenner C., to United States of America, Health and Human Services. Method of synthesis of hydroxy-substituted-4-alkoxyphenylacetic acids. 5,008,449, Cl. 562-478.000.
Richards, Peter S., to Progressive Fastening, Inc. Side load type pipe hanger with single bolt closure. 5,007,604, Cl. 248-62.000.
Richardson, John, to Selectro-Vision, Ltd. Gaming system with system base station and gaming boards. 5,007,649, Cl. 273-237.000.
Richardson, Thomas W.: *See—*
Malcolm, Robert G.; and Richardson, Thomas W., 5,007,286, Cl. 73-181.000.
Richey, Forrest A., Jr.; and Hoy, Kenneth L., to Union Carbide Chemicals And Plastics Technology Corporation. High solids coating compositions. 5,008,336, Cl. 525-124.000.
Richter Gedeon Vegyeszeti Gyar R. T.: *See—*
Schon, Istvan; Nyeki, Olga; Kisfaludy, Lajos, deceased; Denes, Laszlo; Hajos, Gyorgy; and Szporny, Laszlo, 5,008,246, Cl. 514-18.000.
Richter, Simon J.; and Hohmann, Frank G., to Coca-Cola Company, The. Integral vent tube. 5,007,565, Cl. 222-481.000.
Ricles, Thomas D.; and Ward, Richard M., to Dresser Industries, Inc. Dual firing system for a perforating gun. 5,007,344, Cl. 102-31.200.
Ricles, Thomas D., to Dresser Industries, Inc. Perforating gun assembly and universal perforating charge clip apparatus. 5,007,486, Cl. 175-4.600.
Ricoh Company, Ltd.: *See—*
Asakawa, Toshifumi; and Nakayama, Haruo, 5,008,554, Cl. 250-551.000.
Gotoh, Hiroshi; Kusakata, Shigeru; and Shiojima, Isao, 5,008,238, Cl. 503-217.000.
Kondo, Hitoshi; Ohta, Eiichi; and Kimura, Yuji, 5,008,732, Cl. 357-71.000.
Rokutanzono, Takashi; Ide, Yukio; Nagame, Hiroshi; Ohshima, Kohichi; Kojima, Narihito; and Nousho, Shinji, 5,008,172, Cl. 430-67.000.
Sakamoto, Koji; Tanzawa, Misao; Iwata, Nobuo; Murayama, Hisao; Takahashi, Susumu; and Komada, Kenya, 5,008,711, Cl. 355-206.000.
Shinada, Masayuki; Ikesue, Masumi; Kikuno, Mitsutoyo; and Murai, Tatsuya, 5,008,709, Cl. 355-309.000.
Riddick, Wayne T.; and Smith, Vincent F., Jr., to Amoco Corporation. Hydroxyethers of epoxidized polybutenes. 5,008,338, Cl. 525-177.000.
Rieber, Roy S.: *See—*
Conner, Jesse R.; and Rieber, Roy S., 5,008,021, Cl. 210-751.000.
Rieder, Heinz; and Schwaiger, Max, to RSF-Elektronik Gesellschaft m.b.H. Incremental measuring system. 5,007,177, Cl. 33-706.000.
Rieter Machine Works, Ltd.: *See—*
Busenhart, Peter; Schneeberger, Ruedi; Holbein, Erwin; Wirz, Armin; Flueli, Adolf; and Maier, Hansueli, 5,007,595, Cl. 242-46.400.
Rigsby, Robert. Plant growing receptacle. 5,007,135, Cl. 47-73.000.
Riley, Richard E.: *See—*
Brown, Kenneth; and Riley, Richard E., 5,007,159, Cl. 29-622.000.
Riley, Thomas P.; Buffman, Martin; and Cyr, Reginald J., to United States of America, America. Position and velocity measuring system. 5,008,860, Cl. 367-6.000.
Ringo, James P., to Bio-Cide International, Inc. Catalyst enhanced generation of chlorine dioxide. 5,008,096, Cl. 423-477.000.
Risius, Harald; and Oldemeyer, Wilhelm, to Glunz Aktiengesellschaft. Method of producing a structure, more particularly a wooden structure, in the surface of a hardened fibreboard. 5,008,057, Cl. 264-134.000.
Robbins, Virginia M.: *See—*
Fletcher, Robert M.; Kuo, Chihping; Osentowski, Timothy D.; and Robbins, Virginia M., 5,008,718, Cl. 357-17.000.
Robello, Douglas R.; Ulman, Abraham; Urankar, Edward J.; and Willand, Craig S., to Eastman Kodak Company. Optical article exhibiting a high level of second order polarization susceptibility. 5,008,043, Cl. 252-582.000.
Robello, Douglas R.; and Ulman, Abraham, to Eastman Kodak Company. Preparation of polysulfones. 5,008,369, Cl. 528-391.000.
Robert Bosch GmbH: *See—*
Babitzka, Rudolf, 5,007,400, Cl. 123-506.000.
Rossignol, Francois, 5,007,584, Cl. 239-88.000.
Roberts, Gene, to Windsor Communications, Inc. Splice closure apparatus. 5,007,701, Cl. 350-96.200.
Roberts, John S., to Phillips Petroleum Company. Production of mercapto compounds. 5,008,432, Cl. 558-436.000.

Roberts, Thomas J., to AT&T Bell Laboratories. Efficient method for encrypting superblocks of data. 5,008,935, Cl. 380-29.000.

Robertshaw Controls Company: *See*—
Wellenkotter, Carl A.; and Counts, David E., 5,007,396, Cl. 123-339.000.

Robertson, Martin N.: *See*—
Alexander, Joseph H.; Radcliffe, Stanley L.; Robertson, Martin N.; Bator, Eugene A.; and Anderson, John E., 5,007,315, Cl. 83-72.000.

Robinson, Amy L.; and Banerjee, Chandra K., to R. J. Reynolds Tobacco Company. Process for providing smokable material. 5,007,440, Cl. 131-369.000.

Robinson Knife Manufacturing Co., Inc.: *See*—
Skerker, Robert B.; and Prindle, William, 5,008,508, Cl. 219-10.55E.

Robinson, Scott T.; Denning, William K.; Redfield, John M.; and Garthwaite, John H., to Leviton Manufacturing Co., Inc. Modular higher density communications coupling system. 5,007,860, Cl. 439-540.000.

Roby Teknik Aktiebolag: *See*—
Johansson, Goran; and Olanders, Par, 5,008,076, Cl. 422-28.000.

Roccaforte, Harry I. Recloseable carton with pouring spout. 5,007,542, Cl. 206-621.600.

Rochet, Gerald: *See*—
Druet, Bernard; and Rochet, Gerald, 5,008,365, Cl. 528-230.000.

Rocklage, Scott M.: *See*—
Quay, Steven C.; Rocklage, Scott M.; and Miller, Warren K., 5,008,099, Cl. 424-1.100.

Rockwell International: *See*—
Mahoney, Murray W.; and Ghosh, Amit K., 5,007,265, Cl. 72-37.000.

Rockwell International Corporation: *See*—
Lemon, Robert W.; and Arzoian, John, 5,007,309, Cl. 74-869.000.

Rodgers, Joel E., Sr.; Schmitz, Ambrose J.; and Romig, Alton D., to Allied-Signal Inc. Cold air lock vapor seal for process solvent vapor recovery and control. 5,007,179, Cl. 34-22.000.

Rodriguez, Paul A.: *See*—
Wills, Kendall S.; and Rodriguez, Paul A., 5,008,729, Cl. 357-51.000.

Rofin-Sinar Laser GmbH: *See*—
Martinen, Hinrich; Knobbe, Karl-Heinz; Simonsson, Samuel S.; and Wirth, Peter, 5,008,896, Cl. 372-83.000.

Roger, Joseph: *See*—
Trigon, Roland; Drabowitch, Serge; and Roger, Joseph, 5,008,677, Cl. 342-17.000.

Rogers, Alan E.: *See*—
Fremuth, Dietmar R. A.; Rogers, Alan E.; and Zahner, John C., 5,008,088, Cl. 422-234.000.

Rogers, Duane E.: *See*—
Broughton, George L.; Breckenfeld, Paul W.; Mate, David W.; Nettles, James A.; and Rogers, Duane E., 5,007,393, Cl. 123-195.00R.

Rogozinski, Chaim. Apparatus for internally fixing the spine. 5,007,909, Cl. 606-61.000.

Roh, Te N.: *See*—
Karakida, Kenichi; Yagi, Shigeru; Fukuda, Yuzuru; Nishikawa, Masayuki; Roh, Te N.; Takahashi, Noriyoshi; Ono, Masato; Yokoi, Masaki; and Komori, Yumiko, 5,008,170, Cl. 430-65.000.

Rohm and Haas Company: *See*—
Killgoar, Paul C., Jr.; Samus, Marsha A.; Koller, Robert D., Sr.; and Hemenway, Carl P., 5,008,324, Cl. 524-504.000.
Petigara, Ramesh B.; and Sharp, Douglas N., 5,008,395, Cl. 548-213.000.

Rokutanzono, Takashi; Ide, Yukio; Nagame, Hiroshi; Ohshima, Kohichi; Kojima, Narihito; and Nousho, Shinji, to Ricoh Company, Ltd. Electrophotographic photoconductor. 5,008,172, Cl. 430-67.000.

Rolfe, Barry G.; Shine, John; Scott, Kieran F.; and Hennecke, Hauke, to Lubrizol Genetics, Inc. nifH promoters of Bradyrhizobium. 5,008,194, Cl. 435-172.300.

Roll, Ulrich: *See*—
Kastl, Roland; and Roll, Ulrich, 5,008,596, Cl. 315-205.000.

Rolls Royce plc: *See*—
Chamberlain, John R., 5,008,136, Cl. 427-388.100.

Rolscreen Company: *See*—
Minter, Mearl, 5,007,215, Cl. 52-90.000.

Romig, Alton D.: *See*—
Rodgers, Joel E., Sr.; Schmitz, Ambrose J.; and Romig, Alton D., 5,007,179, Cl. 34-22.000.

Rood, Michael J.: *See*—
Nasby, James S.; and Rood, Michael J., 5,007,571, Cl. 225-106.000.

Rooperol (N.A.): *See*—
Wenteler, George L.; Pegel, Karl H.; Drews, Siegfried; and Kundig, Hans, 5,008,471, Cl. 568-729.000.

Roos, Otto: *See*—
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; Hoefke, Wolfgang; Arndts, Dietrich; and Streller, Ilse, 5,008,273, Cl. 514-301.000.

Rose, Howard; and McAffer, Ian G. C., to Waverley Pharmaceuticals Limited. Bottle caps. 5,007,546, Cl. 215-32.000.

Rose, James W.; and Sitnik, Theresa A., to General Electric Company. Method for sealing an electronic device containing a fluid material. 5,008,049, Cl. 264-4.000.

Rosenberg, Farel. Molar controlling and positioning orthodontic appliance with simplified orientation, pressure and adjustment mechanisms. 5,007,828, Cl. 433-18.000.

Rosenberg, Robert: *See*—
Blouse, Jeffrey L.; Fulton, Inge G.; Lange, Russell C.; Meyerson, Bernard S.; Nummy, Karen A.; Revitz, Martin; and Rosenberg, Robert, 5,008,207, Cl. 437-31.000.

Rosenbluth, Robert F.; Lenker, Jay A.; and Greene, George R., to Advanced Surgical Intervention, Inc. Balloon dilatation catheter. 5,007,898, Cl. 604-54.000.

Rosenow, Barry L.: *See*—
Anderson, Duwayne R.; McMahon, Robert W.; and Rosenow, Barry L., 5,008,545, Cl. 250-358.100.

Rosenow, Michael J.: *See*—
Hamilton, Scott B.; and Rosenow, Michael J., 5,008,936, Cl. 380-50.000.

Rosnack, Ellen M.; Pray, Larry A.; Marable, Alger C.; and Zekert, Gerry C., to Nabisco Brands, Inc. Process and apparatus for continuously removing contaminates from edible cooking oil. 5,008,122, Cl. 426-417.000.

Ross, Douglas A., to University of British Columbia, The. Plasma torch with axial reactant feed. 5,008,511, Cl. 219-121.480.

Rossey, Guy; Ugolini, Antonio; Chekroun, Isaac; Vartanian, Abkar; and Wick, Alexander, to Synthelabo. Process for the preparation of methyl (+)-(2S,3S)-3-[(2-aminophenyl)thio]-2-hydroxy-3-(4-methoxyphenyl)-propionates. 5,008,434, Cl. 560-17.000.

Rossignol, Francois, to Robert Bosch GmbH. Fuel injection device. 5,007,584, Cl. 239-88.000.

Rothfuss, Hans; Bruckner, Raimund; Keutgen, Peter; Seeger, Josef; Winkelmann, Manfred; and Metzger, Herbert, to Didier-Werke AG. Apparatus for mounting a gas washing sink in a centered manner in perforated brick. 5,007,621, Cl. 266-220.000.

Roubin, Marc: *See*—
Samdi, Azzdddine; Paris, Rene; and Roubin, Marc, 5,008,092, Cl. 423-263.000.

Roussel Uclaf: *See*—
Demassey, Jacques; Demoute, Jean-Pierre; and Tessier, Jean, 5,008,281, Cl. 514-376.000.

Row, Roderick J. Combination anti-g and pressure suit. 5,007,893, Cl. 600-20.000.

Rowan, Timothy M.: *See*—
Unsworth, Peter J.; Merrison, John C.; and Rowan, Timothy M., 5,008,608, Cl. 318-729.000.

Roy, Marc P., to Northern Telecom Limited. High-speed dynamic CMOS circuit and precharge generator. 5,008,569, Cl. 307-465.000.

Roynard, Joel: *See*—
Penitot, Gerard; Cartigny, Marcel; Roynard, Joel; Valdenaire, Bruno; Astier, Marc; Mery, Bernard; and Wendling, Michael, 5,007,447, Cl. 137-102.000.

RSF-Elektronik Gesellschaft m.b.H.: *See*—
Rieder, Heinz; and Schwaiger, Max, 5,007,177, Cl. 33-706.000.

Rubenstein, Robert L.: *See*—
Howells, Joseph A.; Jachmann, Emil F.; and Rubenstein, Robert L., 5,008,871, Cl. 369-28.000.

Rubinstein, Sergio; and Hoshi, Masayuki. Manufacture and installation of a dental prosthesis. 5,007,834, Cl. 433-173.000.

Ruckert, Holger, to BTS Broadcast Television Systems GmbH. Method and apparatus for generating an auxiliary timing signal in the horizontal blanking interval of a video signal. 5,008,749, Cl. 358-147.000.

Rudish, Ronald M., to AIL Systems, Inc. Method and apparatus for dividing high frequency analog signals. 5,008,571, Cl. 307-529.000.

Rufolo, Paul G. Preventative maintenance system for underwater pipes. 5,008,075, Cl. 422-6.000.

Ruhrchemie Aktiengesellschaft: *See*—
Breitkopf, Norbert; Dambkes, Georg; and Bach, Hanswilhelm, 5,008,473, Cl. 568-868.000.

Rumennik, Vladimir: *See*—
Lidow, Alexander; Herman, Thomas; and Rumennik, Vladimir, 5,008,725, Cl. 357-23.400.

Rush, Robert E. Gasoline engine powered hand-held circular saw. 5,007,173, Cl. 30-391.000.

Rushforth, Christine A.: *See*—
Moody, Gillian M.; and Rushforth, Christine A., 5,008,089, Cl. 423-121.000.

Russay, Thomas; and Stacy, Carl W., to Zenith Electronics Corporation. Domed light housing for back-lit LCD display. 5,008,658, Cl. 340-784.000.

Russell, John N.: *See*—
Hale, Peter G.; and Russell, John N., 5,007,703, Cl. 350-96.230.

Ruter, Hans-Werner, to U.S. Philips Corporation. Package and packing body for small components. 5,007,539, Cl. 206-524.000.

Rutschle, Eugen: *See*—
Winkler, Hans-Henning; and Rutschle, Eugen, 5,007,157, Cl. 29-568.000.

Ryan, Robert C.: *See*—
Smegal, John A.; Ryan, Robert C.; and Nash, Richard M., 5,008,003, Cl. 208-254.00H.

Ryan, Wayne L., to Streck Laboratories, Inc. Simulated human platelets from red blood cells. 5,008,201, Cl. 436-10.000.

Rydell, Mark A., to Everest Medical Corporation. Electrosurgical instrument having needle cutting electrode and spot-coag electrode. 5,007,908, Cl. 606-47.000.

Ryder, Steven L. Position insensitive aspirator. 5,008,048, Cl. 261-78.200.

Ryobi Ltd.: *See*—
Emura, Masaharu; and Kobayashi, Takehiro, 5,007,601, Cl. 242-223.000.
Ishii, Koji, 5,007,338, Cl. 101-142.000.

Ryoke, Katsumi; Takahashi, Masatoshi; Hashimoto, Akihiro; and Hasumi, Kazuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 5,008,147, Cl. 428-323.000.

Ryomei Engineering Co., Ltd.: *See*—
Nakano, Takafumi; Seo, Akikazu; Soeda, Hiromitsu; and Sueoka, Kazufumi, 5,007,341, Cl. 101-349.000.

S. A. Manufacture Belge de Gembloux: *See*—
Vincent, Andre; and Munting, Evrard, 5,007,935, Cl. 623-22.000.

S&C Electric Company: *See*—
Scherer, Henry W., 5,007,759, Cl. 403-13.000.

Saab Missiles Aktiebolag: *See*—
Lundin, Jan-Erik, 5,008,522, Cl. 250-203.600.

Saenz, Hillary: *See*—
Henry, Mark; and Saenz, Hillary, 5,007,642, Cl. 273-148.00R.

Safford, Sarah E.: *See*—
Brown, William E., III; Safford, Sarah E.; and Clemens, John M., 5,008,080, Cl. 422-56.000.

Sage, Daniel E.; and Patrick, James C., Jr., to Ponderosa Corporation. Serving bar and container for food. 5,007,552, Cl. 220-23.830.

Sager, Peter, to HGZ Maschinenbau AG. Automatic coffee machine. 5,007,333, Cl. 99-286.000.

Saint-Gobain Vitrage International: *See*—
Mathivat, Denis; and Petitcollin, Jean-Marc, 5,007,949, Cl. 65-160.000.

Saito, Hiromitsu: *See*—
Kanda, Yutaka; Yasuzawa, Tohru; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; and Morimoto, Makoto, 5,008,271, Cl. 514-292.000.

Saito, Hiroshi, to Canon Kabushiki Kaisha. Optical scanning device for scanning a predetermined surface with a plurality of light beams. 5,008,686, Cl. 346-108.000.

Saito, Isao: *See*—
Yamauchi, Hiroshi; Sugiyama, Isao; Saito, Isao; Nomoto, Seiichiro; Kamiya, Takashi; Machida, Yoshimasa; and Negi, Shigeto, 5,008,260, Cl. 514-202.000.

Saito, Kazuharu; Matsukura, Hiroyasu; Komase, Hiroshi; Tsuneda, Haruhiro; Watanabe, Junji; Saito, Tadao; Doy, Toshiroh; and Matsunaga, Kazuo, to K.K. Sankyo Seiki Seisakusho; and Nippon T&T Corp. Optical fiber connector polishing apparatus and method. 5,007,209, Cl. 51-283.00R.

Saito, Kazutaka: *See*—
Tanuma, Chiaki; Itsumi, Kazuhiro; Iwase, Nobuo; Ono, Tomio; Kondo, Yuu; and Saito, Kazutaka, 5,008,582, Cl. 310-332.000.

Saito, Makoto: *See*—
Nishiyama, Nobumasa; Saito, Makoto; Ouchi, Yasuhide; Katoh, Yasuhiro; Kamo, Yoshihisa; Koizumi, Makoto; Aoi, Hajime; Sato, Naoki; and Tsuchiya, Reijiro, 5,008,761, Cl. 360-45.000.

Saito, Noriaki; Kanagawa, Shuichi; and Sakamoto, Hideshi, to Sumitomo Chemical Company, Limited. Glycidyl ethers of phenolic compounds and process for producing the same. 5,008,350, Cl. 525-507.000.

Saito, Tadao: *See*—
Saito, Kazuharu; Matsukura, Hiroyasu; Komase, Hiroshi; Tsuneda, Haruhiro; Watanabe, Junji; Saito, Tadao; Doy, Toshiroh; and Matsunaga, Kazuo, 5,007,209, Cl. 51-283.00R.

Saitou, Norikazu: *See*—
Kuramochi, Wataru; Tsuruoka, Yoshiaki; Saitou, Norikazu; Shibuya, Akira; and Yamashita, Shuichi, 5,008,552, Cl. 235-483.000.

Saitou, Yutaka. Kinetic energy recovery device of liquid and gas. 5,007,241, Cl. 60-698.000.

Sakai, Akira: *See*—
Nakagawa, Katsumi; Ishihara, Shunichi; Kanai, Masahiro; Murakami, Tsutomu; Arao, Kozo; Fujioka, Yasushi; and Sakai, Akira, 5,008,726, Cl. 357-30.000.

Sakai, Norio: *See*—
Tamaki, Kuniaki; Sakai, Norio; and Minowa, Kenji, 5,007,534, Cl. 206-329.000.

Sakai, Toshifumi: *See*—
Yamamoto, Masaji; Tanooka, Shigeo; and Sakai, Toshifumi, 5,007,885, Cl. 475-231.000.

Sakakibara, Hiroshi: *See*—
Aoshima, Syozo; Hirota, Kunio; Sakakibara, Hiroshi; Sawai, Naoyuki; and Sato, Takeaki, 5,007,281, Cl. 72-406.000.

Sakamoto, Fumio: *See*—
Kondo, Hirosato; Taguchi, Masahiro; Inoue, Yoshimasa; and Sakamoto, Fumio, 5,008,389, Cl. 544-343.000.

Sakamoto, Hideshi: *See*—
Saito, Noriaki; Kanagawa, Shuichi; and Sakamoto, Hideshi, 5,008,350, Cl. 525-507.000.

Sakamoto, Hiroshi: *See*—
Kobayashi, Hitoshi; Takano, Akira; Narusawa, Naoharu; Tsukada, Yukihiko; Sakamoto, Hiroshi; Hirano, Masaki; and Ando, Masao, 5,008,710, Cl. 355-202.000.

Sakamoto, Koji; Tanzawa, Misao; Iwata, Nobuo; Murayama, Hisao; Takahashi, Susumu; and Komada, Kenya, to Ricoh Company, Ltd. Image forming apparatus. 5,008,711, Cl. 355-206.000.

Sakamoto, Masahiro: *See*—
Ono, Takeshi; Sakamoto, Masahiro; and Takano, Tadashi, 5,008,607, Cl. 318-696.000.

Sakuramoto, Takahumi: *See*—
Tominaga, Takashi; Nishiyama, Souji; Sakuramoto, Takahumi; and Honda, Makoto, 5,008,151, Cl. 428-343.000.

Salmet Gesellschaft mit beschrankter Haftung & Co., Kommanditgesellschaft: *See*—
Lackner, Karl H., 5,007,379, Cl. 119-17.000.

Salmon, Garland R., to Newton Instrument Company. Shelf assembly having infinitely vertically adjustable top surface. 5,008,779, Cl. 361-415.000.

Salomon S.A.: *See*—
Girault, Eric; and Arnulf, Paul, 5,007,656, Cl. 280-615.000.

Saltzman, Jeremy: *See*—
Jachmann, Emil F.; Saltzman, Jeremy; Chamberlin, David B.; D'Agosto, Nicholas A.; Harris, Mark; and Su, Jy-hong, 5,008,835, Cl. 364-513.500.

Salutar, Inc.: *See*—
Quay, Steven C.; Rocklage, Scott M.; and Miller, Warren K., 5,008,099, Cl. 424-1.100.

Salyards, Donald M., to Comfortex, Inc. Flexible covering for reducing moisture/vapor/bacteria transmission. 5,007,123, Cl. 5-448.000.

Samdi, Azzdddine; Paris, Rene; and Roubin, Marc, to Rhone-Poulenc Chimie. Homogeneous powders of yttrium-stabilized quadratic zirconia. 5,008,092, Cl. 423-263.000.

SamSung Electronics Co., Ltd.: *See*—
Kim, Tae Y., 5,007,607, Cl. 248-188.900.
Sung, Song G., 5,008,762, Cl. 360-61.000.

Samukawa, Koji: *See*—
Seki, Masaki; Samukawa, Koji; and Hanaoka, Osamu, 5,008,806, Cl. 364-191.000.

Samulon, Alfred S.: *See*—
Weiss, Lawrence D.; Caruthers, Douglas W.; Inatomi, Charles T.; Kawan, Joseph C.; Lee, Shan; Marks, Harvey; Meguerdijan, Sarkis A.; Parekh, Dilip J.; Samulon, Alfred S.; Takata, Melvin M.; Tucci, Morris L.; and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.

Samus, Marsha A.: *See*—
Killgoar, Paul C., Jr.; Samus, Marsha A.; Koller, Robert D., Sr.; and Hemenway, Carl P., 5,008,324, Cl. 524-504.000.

Sanders, Mildred P. Zipper stitching guide. 5,007,359, Cl. 112-265.200.

Sandoz Ltd.: *See*—
Holliger, Herbert, 5,008,379, Cl. 534-684.000.

Sandvik AB: *See*—
Pantzar, Glenn G. E., 5,007,775, Cl. 407-113.000.

Sangregory, Jude A.; and DiRisio, Anthony, to Eastman Kodak Company. Battery-containing apparatus. 5,007,859, Cl. 439-500.000.

Sankrithi, Mithra M. K. V.: *See*—
Nadkarni, Arun A.; and Sankrithi, Mithra M. K. V., 5,008,825, Cl. 364-434.000.

Sankyo Company Limited: *See*—
Okazaki, Takao; Takahashi, Shuji; Iwado, Seigo; Tanaka, Keiji; Yanai, Toshiaki; and Kajino, Hisaki, 5,008,191, Cl. 435-124.000.

Sannohe, Kunio: *See*—
Katakami, Tsutomu; Yokoyama, Tatsuro; Miyamoto, Michihiko; Mori, Haruki; Kawauchi, Nobuya; Nobori, Tadahito; Sannohe, Kunio; Kamiya, Joji; Ishii, Masaaki; and Yoshihara, Kanji, 5,008,267, Cl. 514-269.000.

Sano, Atuhiro: *See*—
Shimano, Masami; and Sano, Atuhiro, 5,007,739, Cl. 356-383.000.

Sano, Hironari; and Ohno, Kenyu, to Mitsubishi Petrochemical Co., Ltd. Thermoplastic resin composition. 5,008,332, Cl. 525-92.000.

Sano, Hiroshi: *See*—
Kanda, Yutaka; Yasuzawa, Tohru; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; and Morimoto, Makoto, 5,008,271, Cl. 514-292.000.

Sano, Masahiro: *See*—
Honda, Norimasa; and Sano, Masahiro, 5,008,042, Cl. 252-518.000.

Sanshin Industries Co., Ltd.: *See*—
Okita, Ryozo, 5,007,866, Cl. 440-61.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Tanaka, Seiichi; and Suzuki, Tamotsu, 5,007,390, Cl. 123-180.00T.

Sansone, Ronald P.; Schumacher, Karl H.; Keating, Raymond; Wall, Joseph W.; and Joshi, Uday W., to Pitney Bowes Inc. Central postage data communication network. 5,008,827, Cl. 364-464.020.

Santasalo, Lauri: *See*—
Wutzler, Peter; Mucke, Horst; and Santasalo, Lauri, 5,008,079, Cl. 422-28.000.

Santilli, Donald S.: *See*—
Zones, Stacy I.; Santilli, Donald S.; Ziemer, James; Holtermann, Dennis L.; Pecoraro, Theresa A.; and Innes, Robert A., 5,007,997, Cl. 208-46.000.

Sanwa Kagaku Kenkyusho Co., Ltd.: *See*—
Kurono, Masayasu; Kondo, Yasuaki; Mitani, Takahiko; Baba, Yutaka; and Sawai, Kiichi, 5,008,416, Cl. 556-89.000.
Natori, Shunji, 5,008,371, Cl. 530-324.000.

Sanyo Electric Co., Ltd.: *See*—
Furukawa, Nobuhiro; Inoue, Kenji; Nogami, Mitsuzo; Kameoka, Seiji; and Tadokoro, Motoo, 5,008,164, Cl. 429-59.000.
Ino, Kazuo; Shimizu, Yoshiaki; Okuda, Hiroyuki; Ishihara, Kousou; and Ogura, Takashi, 5,007,158, Cl. 29-603.000.

Saotome, Yoshimi; Kuchiki, Kiyotsuna; and Hayashi, Norihiko, to Kabushiki Kaisha Kobe Seiko Sho. Mechanism for suppressing displacement of travelling crane. 5,007,544, Cl. 212-265.000.

Sarosi, Lajos: *See*—
Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponacz, Anna; Eifert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo ; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.

Sasae, Taiichio; and Taguchi, Yoshio, to Kansai Engineering Co., Ltd. Material for treating heavy metals and metal ions. 5,007,965, Cl. 106-800.000.

Sasaki, Kazuya; Yoshizawa, Sakae; Inagaki, Shinya; and Takeda, Keiko, to Fujitsu Limited. Optical fiber amplifier/multiplexer. 5,007,698, Cl. 350-96.150.
Sasaki, Kazuyuki; and Kataoka, Ichiro, to Yazaki Corporation. Heat-radiation type level sensor. 5,007,288, Cl. 73-295.000.
Sasaki, Yoshio: *See—*
Souketani, Koichi; Ito, Yukio; Sasaki, Yoshio; Kurita, Teiji; and Tamiya, Jun, 5,007,773, Cl. 407-27.000.
Sasaki, Yutaka: *See—*
Okubo, Susumu; and Sasaki, Yutaka, 5,007,870, Cl. 440-89.000.
Sassak, John J. Beer dispensing and monitoring method and apparatus. 5,007,560, Cl. 222-1.000.
Sasse, Klaus: *See—*
Kruger, Bernd-Wieland; Sasse, Klaus; Hoever, Franz-Peter; Nentwig, Gunther; and Behrenz, Wolfgang, 5,008,261, Cl. 514-212.000.
Sat(Societe Anonyme de Telecommunications: *See—*
Bertrand, Michel P.; Bucher, Michel B.; and Delclaux, Andre R., 5,008,543, Cl. 250-342.000.
Satake, Yoshikatsu: *See—*
Kashiwadate, Ken; Satake, Yoshikatsu; Kaneko, Takashi; Tada, Masahiro; and Katto, Takayuki, 5,008,370, Cl. 528-481.000.
Satchell, Donald P., Jr.: *See—*
Ramachandran, Ramakrishnan; MacLean, Donald L.; and Satchell, Donald P., Jr., 5,008,412, Cl. 549-523.000.
Ramachandran, Ramakrishnan; MacLean, Donald L.; Satchell, Donald P., Jr.; and Malik, Virginia A., 5,008,414, Cl. 549-538.000.
Sato, Hiroshi: *See—*
Yasumi, Yoshiyuki; and Sato, Hiroshi, 5,007,752, Cl. 400-636.000.
Sato, Katsuhiro: *See—*
Akasaki, Yutaka; Nukada, Katsumi; and Sato, Katsuhiro, 5,008,431, Cl. 558-402.000.
Sato, Kazuhiro, to Sony Corporation. Receivers with microcomputer controlled tuning. 5,008,955, Cl. 455-181.000.
Sato, Koji: *See—*
Nagaoka, Shinji; Sato, Koji; and Kawai, Michio, 5,008,695, Cl. 354-403.000.
Sato, Masakatsu: *See—*
Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji; Shimizu, Sadami; Sato, Masakatsu; and Tamabayashi, Hanzo, 5,008,469, Cl. 568-722.000.
Sato, Naoki: *See—*
Nishiyama, Nobumasa; Saito, Makoto; Ouchi, Yasuhide; Katoh, Yasuhiro; Kamo, Yoshihisa; Koizumi, Makoto; Aoi, Hajime; Sato, Naoki; and Tsuchiya, Reijiro, 5,008,761, Cl. 360-45.000.
Sato, Ryo: *See—*
Kikuchi, Ikuya; and Sato, Ryo, 5,007,712, Cl. 350-255.000.
Sato, Shuichi: *See—*
Kawakubo, Kiyoshi; and Sato, Shuichi, 5,007,358, Cl. 112-235.000.
Sato, Susumu: *See—*
Yokoi, Koichi; Irinoda, Kazuhiko; Kohya, Hidehiko; Sato, Susumu; and Katori, Tatsuhiko, 5,008,419, Cl. 556-137.000.
Sato, Takeaki: *See—*
Aoshima, Syozo; Hirota, Kunio; Sakakibara, Hiroshi; Sawai, Naoyuki; and Sato, Takeaki, 5,007,281, Cl. 72-406.000.
Sato, Yoshiaki: *See—*
Kawasaki, Yoshinao; Kawahara, Hironobu; Sato, Yoshiaki; Fukuyama, Ryooji; Nojiri, Kazuo; and Torii, Yoshimi, 5,007,981, Cl. 156-643.000.
Satoru Yagi: *See—*
Mochizuki, Shigetoshi, 5,007,252, Cl. 63-3.000.
Satterfield, Marshall G.; Steinke, David M.; and Blankenship, Michael, to Process Bonding, Inc. Method of making a headliner. 5,007,976, Cl. 156-222.000.
Sauber, Charles J. Truck step. 5,007,654, Cl. 280-166.000.
Saunders, Anne L.; and Fields, John G. Insect guard system and method of use. 5,007,196, Cl. 43-112.000.
Saunders, Raymond L.; and Forrestal, Joseph M. Device for separating and closing a split mold having two halves. 5,007,814, Cl. 425-3.000.
Sauter, Hubert: *See—*
Schuetz, Franz; Brand, Siegbert; Wenderoth, Bernd; Sauter, Hubert; Ammermann, Eberhard; and Lorenz, Cisela, 5,008,438, Cl. 560-55.000.
Schulz, Guenter; and Sauter, Hubert, 5,008,446, Cl. 560-254.000.
Savastano, Stefano G.: *See—*
Halloran, Daniel J.; Kasprzak, Kenneth A.; Savastano, Stefano G.; and Swihart, Terence J., 5,008,424, Cl. 556-419.000.
Sawai, Kiichi: *See—*
Kurono, Masayasu; Kondo, Yasuaki; Mitani, Takahiko; Baba, Yutaka; and Sawai, Kiichi, 5,008,416, Cl. 556-89.000.
Sawai, Naoyuki: *See—*
Aoshima, Syozo; Hirota, Kunio; Sakakibara, Hiroshi; Sawai, Naoyuki; and Sato, Takeaki, 5,007,281, Cl. 72-406.000.
Sawaki, Mikio: *See—*
Nakajima, Masashi; Tomita, Nobuo; Suzaki, Kenji; Kaneko, Akira; and Sawaki, Mikio, 5,008,455, Cl. 564-300.000.
Sawamoto, Takeyuki; Nomura, Masashi; and Tarumi, Niro, to Hoya Corporation. Contact lens. 5,008,354, Cl. 526-246.000.
Sayer, Bertram, to 501 Thermal Profiles, Inc. Round top window. 5,007,219, Cl. 52-204.000.
Scalzi, Casper A.; and Schmalz, Richard J., to International Business Machines Corp. Control mechanism for zero-origin data spaces. 5,008,811, Cl. 364-200.000.
Scan Systems, Inc.: *See—*
Walters, William T.; and Thompson, Carroll R., 5,007,291, Cl. 73-640.000.
Scarberry, Paul W.; Kazemba, Rodney L.; and Hestekin, Ralph A., to Sharp Packaging, Inc. Strips of interconnected pre-opened reclosable bags. 5,007,744, Cl. 383-37.000.
Scarpino, Kelvin M. Carpet stretching tool. 5,007,616, Cl. 254-212.000.
Schade, Nicholas: *See—*
Dixon, David S.; and Schade, Nicholas, 5,007,847, Cl. 439-100.000.
Schaefer, Daniel J.: *See—*
Raburn, Richard W.; and Schaefer, Daniel J., 5,007,124, Cl. 5-481.000.
Schantz, Christopher A.: *See—*
Pan, Alfred I-Tsung; Hanson, Eric G.; Schantz, Christopher A.; and Childers, Winthrop D., 5,008,689, Cl. 346-140.00R.
Schaub, Bernard: *See—*
Audaire, Luc; Peuzin, Jean C.; and Schaub, Bernard, 5,008,541, Cl. 250-338.300.
Schedele, Helmut, to Siemens Aktiengesellschaft. Polarized armature contact relay. 5,008,641, Cl. 335-80.000.
Scheef, Hans-Volker: *See—*
Schleppinghoff, Bernhard; Kohler, Hans-Dieter; Gabel, Christian; and Scheef, Hans-Volker, 5,008,466, Cl. 568-697.000.
Scheerer, William E.: *See—*
Matzelle, Albert J.; and Scheerer, William E., 5,007,746, Cl. 384-420.000.
Schelde-Delta: *See—*
Martens, Laurent, 5,008,047, Cl. 260-424.000.
Scherenberg, Dieter, to Daimler-Benz AG. Intake system for a mixture-compressing internal-combustion engine. 5,007,402, Cl. 123-549.000.
Scherer, Dieter; and Strasser, William E., to Hewlett-Packard Company. Pulse analyzer with gain compression. 5,008,631, Cl. 330-51.000.
Scherer, Henry W., to S&C Electric Company. Arrangement for associating an electrical device with a mounting therefor. 5,007,759, Cl. 403-13.000.
Schering Corporation: *See—*
Bodor, Nicholas, 5,008,111, Cl. 424-449.000.
Chackalamannil, Samuel, 5,008,404, Cl. 549-215.000.
Schilling, Peter; and Schreuders, Hans G., to Westvaco Corporation. Cationic aqueous bituminous emulsion-aggregate slurries preparation. 5,008,382, Cl. 536-11.000.
Schindler, Juergen; and Heinen, Hartwig, to Honeywell Regelsysteme GmbH. Sensor and control module with improved sensor isolation. 5,008,775, Cl. 361-383.000.
Schleper, Bernard: *See—*
Bremus, Norbert; Gutsche, Bernhard; Jeromin, Lutz; Peukert, Eberhard; and Schleper, Bernard, 5,008,046, Cl. 260-410.600.
Schleppinghoff, Bernhard; Kohler, Hans-Dieter; Gabel, Christian; and Scheef, Hans-Volker, to EC Erdolchemie GmbH. Process for the isomerization of alkenes having a terminal double bond to give alkenes having an internal double bond. 5,008,466, Cl. 568-697.000.
Schlesinger, Robert A.; Hill, Kimuel L.; Ali, Hamid S.; and Watson, Mark E. Visual alarm device interconnectable to existing monitoring circuitry. 5,008,655, Cl. 340-691.000.
Schlie, LaVerne A.; and Rathge, Robert D., to United States of America, Air Force. Coaxial liquid cooling of high power microwave excited plasma UV lamps. 5,008,593, Cl. 315-39.000.
Schlumberger Technology Corporation: *See—*
Chen, Min-Yi, 5,008,625, Cl. 324-351.000.
Gaston, Didier, 5,007,230, Cl. 53-397.000.
Schmalz, Richard J.: *See—*
Scalzi, Casper A.; and Schmalz, Richard J., 5,008,811, Cl. 364-200.000.
Schmertz, John C. Biaxially corrugated flexible sheet material. 5,008,140, Cl. 428-179.000.
Schmidt, Hans-Fr.; Rauchmaul, Siegfried; and Bednarz, Juergen, to Siemens Aktiengesellschaft. Three-dimensional printed circuit board. 5,008,496, Cl. 174-254.000.
Schmidt, Harald H., to Mold-Masters Limited. Injection molding manifold having a pair of cooling bores on opposite sides of the melt passage. 5,007,821, Cl. 425-548.000.
Schmidt'sche Heissdampf GmbH: *See—*
Herrmann, Hellmut A.; and Hubeler, Wolfgang, 5,007,970, Cl. 134-42.000.
Schmitt Industries, Inc.: *See—*
Linder, Rene, 5,007,305, Cl. 74-573.00R.
Schmitz, Ambrose J.: *See—*
Rodgers, Joel E., Sr.; Schmitz, Ambrose J.; and Romig, Alton D., 5,007,179, Cl. 34-22.000.
Schmitz, Deborah C.: *See—*
Osborn, Thomas W., III; and Schmitz, Deborah C., 5,007,906, Cl. 604-385.100.
Schmode, Hans-Peter, to Accumulatorenwerke Hoppecke Carl Zoeliner & Sohn GmbH & Co. KG. Electrochemical cell. 5,008,165, Cl. 429-94.000.
Schnabel, Werner, to Siemens Aktiengesellschaft. Method for manufacturing a solid electrolyte capacitor in a chip structure. 5,007,149, Cl. 29-25.030.
Schnader, Llewellyn R., to Ford New Holland, Inc. Bag clamping device for waste material debagging apparatus. 5,007,787, Cl. 414-412.000.
Schneeberger, Ruedi: *See—*
Busenhart, Peter; Schneeberger, Ruedi; Holbein, Erwin; Wirz, Armin; Flueli, Adolf; and Maier, Hansueli, 5,007,595, Cl. 242-46.400.
Schneider, Otto: *See—*
Schuster, Johann; Piehler, Martin; Muller, Horst; and Schneider, Otto, 5,008,229, Cl. 502-167.000.

Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; Hoefke, Wolfgang; Arndts, Dietrich; and Streller, Ilse, to Boehringer Ingelheim GmbH. Amino acid derivatives and their pharmaceutical use. 5,008,273, Cl. 514-301.000.

Schoettle, Klaus: *See*—
Huebner, Dietmar; Nagel, Peter; Hirschberg, Ekkehard; Schoettle, Klaus; and Pavelka, Bozidar, 5,007,536, Cl. 206-394.000.

Scholten, James R.: *See*—
Dahlen, John M.; Chhabra, Narender K.; Araujo, Richard K.; Scholten, James R.; Reid, Robert W.; and Soikkeli, Matti, 5,007,285, Cl. 73-170.00A.

Schon, Istvan; Nyeki, Olga; Kisfaludy, Lajos, deceased (by Kisfaludy, Maria, Marta Kisfaludy, Andras Kisfaludy, legal heirs); Denes, Laszlo; Hajos, Gyorgy; and Szporny, Laszlo, to Richter Gedeon Vegyeszeti Gyar R. T. Novel peptides suppressing the function of the immune system, pharmaceutical compositions containing them and process for preparing same. 5,008,246, Cl. 514-18.000.

Schonenbrecher, Paul-Erich: *See*—
Wiese, Helmut; and Schonenbrecher, Paul-Erich, 5,007,498, Cl. 280-248.000.

Schrader, Lutz: *See*—
Thurm, Siegfried; Holm, Reimer; Leuschke, Christian; Rathmann, Dietrich; and Schrader, Lutz, 5,008,148, Cl. 428-336.000.

Schramm, Matthias: *See*—
Franckowiak, Gerhard; Stoltefuss, Jurgen; Bechem, Martin; Gross, Rainer; Kayser, Michael; Hebisch, Siegbert; and Schramm, Matthias, 5,008,279, Cl. 514-354.000.

Schrantz, Gregory A., to Harris Corporation. Dual layer surface gate JFET having enhanced gate-channel breakdown voltage. 5,008,719, Cl. 357-22.000.

Schreuders, Hans G.: *See*—
Schilling, Peter; and Schreuders, Hans G., 5,008,382, Cl. 536-11.000.

Schrottke, Gustav: *See*—
Pope, Keith R.; and Schrottke, Gustav, 5,007,163, Cl. 29-840.000.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See*—
Artzt, Peter; and Mueller, Heinz, 5,007,136, Cl. 19-65.00A.

Schuetz, Franz; Brand, Siegbert; Wenderoth, Bernd; Sauter, Hubert; Ammermann, Eberhard; and Lorenz, Cisela, to BASF Aktiengesellschaft. Ortho-substituted phenol ethers and fungicides which contain these compounds. 5,008,438, Cl. 560-55.000.

Schulte, Burkart; Sterner, Hakan; Wetzka, Gerhard; and Hardt, Norbert, to Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH. Lock system for passing objects from a radioactively contaminated chamber into a container. 5,007,213, Cl. 52-29.000.

Schulz, Guenter; and Sauter, Hubert, to BASF Aktiengesellschaft. Preparation of phenoxy-substituted esters and intermediates therefor. 5,008,446, Cl. 560-254.000.

Schulz, Paul; and Schwadtke, Karl, to Henkel Kommanditgesellschaft auf Aktien. Liquid detergent. 5,008,031, Cl. 252-168.000.

Schulze-Froehlich, D-F: *See*—
Steinel, Heinrich-Wolfgang; Armonier, Ulrich; and Schulze-Froehlich, D-F, 5,008,613, Cl. 324-133.000.

Schumacher, Karl H.: *See*—
Sansone, Ronald P.; Schumacher, Karl H.; Keating, Raymond; Wall, Joseph W.; and Joshi, Uday W., 5,008,827, Cl. 364-464.020.

Schumacher, Thomas H.: *See*—
Alverth, Ronald W.; Schumacher, Thomas H.; and Przybylowski, Thaddeus M., 5,007,890, Cl. 493-434.000.

Schuster, Johann; Piehler, Martin; Muller, Horst; and Schneider, Otto, to Wacker-Chemie GmbH. Compositions containing phosphonitrile chlorides. 5,008,229, Cl. 502-167.000.

Schuster, Michael: *See*—
Markinson, Scott; Schuster, Michael; and Hogan, Thomas, 5,008,636, Cl. 331-2.000.

Schutz, Ronald J.: *See*—
Case, Christopher J.; Cheung, Kin P.; Liu, Ruichen; Schutz, Ronald J.; and Wagner, Richard S., 5,008,217, Cl. 437-195.000.

Schwab, Wilhelm; and Muller, Gerhard, to Werner & Pfleiderer, GmbH. Machine for kneading dough portions into a round shape. 5,007,820, Cl. 425-333.000.

Schwadtke, Karl: *See*—
Schulz, Paul; and Schwadtke, Karl, 5,008,031, Cl. 252-168.000.

Schwaiger, Max: *See*—
Rieder, Heinz; and Schwaiger, Max, 5,007,177, Cl. 33-706.000.

Schwartz, Alan: *See*—
Coffen, David L.; Madan, Pradeep B.; and Schwartz, Alan, 5,008,411, Cl. 549-519.000.

Schwartz, Thomas W.: *See*—
Englund, Richard L.; and Schwartz, Thomas W., 5,007,128, Cl. 15-230.160.

Schwarz, Anton, to A. Schwarz & Co. Device for accomodating expansion in fluid circulation systems. 5,007,583, Cl. 237-66.000.

Schwarz, Jean-Claude, to Aerospatiale Societe Nationale Industrielle. System for materializing a point in space, applications thereof and a tooling assembly for said system. 5,007,175, Cl. 33-286.000.

Schwarzer, Paul: *See*—
Kircher, Dieter; and Schwarzer, Paul, 5,007,687, Cl. 303-113.000.

Schweigerling, Paul E. Catheter-insertion device. 5,007,914, Cl. 606-108.000.

Schweitzer, Edmund O., Jr. Battery-powered fault indicator. 5,008,651, Cl. 340-664.000.

Schwenninger, Ronald L.: *See*—
Krushinski, Bert K.; Lawhon, Robert A.; Radecki, Francis A.; and Schwenninger, Ronald L., 5,007,950, Cl. 65-182.500.

Science Research Laboratory, Inc.: *See*—
Klinkowstein, Robert W., 5,008,800, Cl. 363-61.000.

Scientific Design Company, Inc.: *See*—
Liu, Kintoken H., 5,008,413, Cl. 549-534.000.

Scimone, Anthony: *See*—
Klemann, Lawrence P.; Finley, John W.; and Scimone, Anthony, 5,008,126, Cl. 426-611.000.

Scobie, William B.; and Frenzel, Robert A., to Keystone International Holdings Corp. Rotary actuator and seal assembly for use therein. 5,007,330, Cl. 92-120.000.

Scott Fetzer Company, The: *See*—
Lackner, John R.; Grzywna, Stanley E.; Weber, Ralph A.; and Baird, Thomas E., 5,007,133, Cl. 15-351.000.

Scott, Keith W.: *See*—
Pleasants, Charles W.; and Scott, Keith W., 5,007,479, Cl. 166-178.000.

Scott, Kieran F.: *See*—
Rolfe, Barry G.; Shine, John; Scott, Kieran F.; and Hennecke, Hauke, 5,008,194, Cl. 435-172.300.

Scott, Norman H.: *See*—
Vora, Bipin V.; and Scott, Norman H., 5,008,467, Cl. 568-697.000.

Scripps Clinic and Research Foundation: *See*—
Reese, Robert T.; and Stanley, Harold A., 5,008,198, Cl. 435-240.270.

Scriven, Clare E.: *See*—
Anderson, Larry; Batts, Gregory N.; Purbrick, Malcolm D.; Scriven, Clare E.; and Jones, Stephen A., 5,008,358, Cl. 526-292.300.

Seals, Victoria E.: *See*—
Huang, Kevin C.; Kutz, Karl H.; McNamara, Timothy J.; Seals, Victoria E.; and Still, Gregory S., 5,008,885, Cl. 371-3.000.

Seaquist Closures: *See*—
Imbery, Leo R., Jr., 5,007,545, Cl. 215-14.000.
Mueller, Bruce M., 5,008,066, Cl. 264-537.000.

Sears, Roebuck & Co.: *See*—
Dewire, Robert J.; and Kozlowski, Walter A., 5,007,178, Cl. 33-767.000.

Sebag, Henri: *See*—
Vanlerberghe, Guy; Zysman, Alexandre; and Sebag, Henri, 5,008,406, Cl. 549-378.000.

Secrest, Dean J.: *See*—
Picha, George J.; and Secrest, Dean J., 5,007,900, Cl. 604-106.000.

Secrist, John A., III; Montgomery, John A.; Ealick, Steve E.; Erion, Mark D.; and Guida, Wayne C., to BioCryst, Inc. 2-amino-7-(alicyclomethyl)-3H,5H,-pyrrolo[3,2-d]pyrimidin-4-ones and pharmaceutical uses and compositions containing the same. 5,008,265, Cl. 514-258.000.

Secrist, John A., III; Montgomery, John A.; Ealick, Steve E.; Erion, Mark D.; and Guida, Wayne C., to BioCryst, Inc. 2-amino-7-(heterocyclomethyl)-3H,5H-pyrrolo[3,2-d]pyrimidin-4-ones and pharmaceutical uses and compositions containing the same. 5,008,270, Cl. 514-258.000.

Sedergran, Thomas C., to E. R. Squibb & Sons, Inc. Diastereoselective preparation of phosphinate esters. 5,008,399, Cl. 548-413.000.

Sedigh, Mohammad: *See*—
Edmond, John A.; Waltz, Douglas G.; Mitchell, Muni M.; Sedigh, Mohammad; and Hamerski, Roman, 5,008,735, Cl. 357-74.000.

Seeger, Josef: *See*—
Rothfuss, Hans; Bruckner, Raimund; Keutgen, Peter; Seeger, Josef; Winkelmann, Manfred; and Metzger, Herbert, 5,007,621, Cl. 266-220.000.

Segerson, Eugene E. Fiber optic cable retainer. 5,007,702, Cl. 350-96.200.

Segneri, Carl L. Tool and method for installing roof gutters on buildings. 5,007,224, Cl. 52-741.000.

Seibring, Joachim: *See*—
Ittemann, Peter; Simon, Georg N.; Heinz, Gerhard; Zeiner, Hartmut; Buchert, Hermann; and Seibring, Joachim, 5,008,364, Cl. 528-172.000.

Seidman, Charles B., to Take One Marketing Group, Inc. Gaming method. 5,007,641, Cl. 273-138.00A.

Seiko Epson Corporation: *See*—
Ikegami, Toshimasa, 5,008,868, Cl. 368-88.000.

Seiko Instruments Inc.: *See*—
Hattori, Yoshio, 5,008,738, Cl. 357-23.600.

Seikosha Co., Ltd.: *See*—
Nagaoka, Shinji; Sato, Koji; and Kawai, Michio, 5,008,695, Cl. 354-403.000.

Seilenbinder, Richard W., to Briggs & Stratton Corporation. Hydraulic valve lifter. 5,007,388, Cl. 123-90.550.

Seiner, Jerome A.: *See*—
Nugent, Richard M., Jr.; Niederst, Ken W.; and Seiner, Jerome A., 5,008,137, Cl. 428-35.400.

Seino, Minoru: *See*—
Onose, Tsukasa; Kikuchi, Yasuo; Ogawa, Toshitaka; and Seino, Minoru, 5,008,716, Cl. 355-322.000.

Sejnoha, Vladimir, to Kurzweil Applied Intelligence, Inc. Method and apparatus for automatically updating estimates of undesirable components of the speech signal in a speech recognition system. 5,008,941, Cl. 381-43.000.

Seki, Katsuto: *See*—
Maruyama, Akihiro; Kato, Munehiko; Ishiwaka, Takumi; Seki, Katsuto; and Ohashi, Takashi, 5,008,297, Cl. 521-136.000.

Seki, Kiwao: *See*—
Tsutsuta, Koji; and Seki, Kiwao, 5,008,627, Cl. 324-444.000.

Seki, Masaki; Samukawa, Koji; and Hanaoka, Osamu, to Fanuc Ltd. Method of creating NC data for machining curved surfaces. 5,008,806, Cl. 364-191.000.
Sekigawa, Fujio: *See*—
Kokubo, Hiroyasu; Sekigawa, Fujio; Chiba, Tohru; and Onda, Yoshiro, 5,008,113, Cl. 424-480.000.
Sekine, Kazuyoshi: *See*—
Nonaka, Katusnobu; and Sekine, Kazuyoshi, 5,008,620, Cl. 324-213.000.
Sekino, Masami: *See*—
Kitamura, Toru; Ohashi, Yoshio; Sekino, Masami; and Murakawa, Kenichi, 5,008,001, Cl. 208-143.000.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Nakachi, Takeshi; Hata, Akio; and Watanabe, Yoshihisa, 5,008,357, Cl. 526-292.200.
Seko, Hideo, to Aisin Seiki Kabushiki Kaisha. Apparatus for evaporating condensed liquid. 5,007,238, Cl. 60-309.000.
Selectro-Vision, Ltd.: *See*—
Richardson, John, 5,007,649, Cl. 273-237.000.
Sels, Michael O.; and Combs, Bryan D. Loudspeaker system for motor vehicles. 5,008,944, Cl. 381-86.000.
Semiconductor Energy Laboratory Co., Ltd.: *See*—
Yamazaki, Shunpei; Imatou, Shinji; Tsuchiya, Mitsunori; Itoh, Kenji; Inushima, Takashi; and Kawano, Atsushi, 5,007,374, Cl. 118-723.000.
Yamazaki, Shunpei, 5,008,171, Cl. 430-67.000.
Yamazaki, Shunpei, 5,008,211, Cl. 437-40.000.
Sendhoff, Norbert: *See*—
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Sendhoff, Norbert; and Freudenberg, Enrique, 5,008,321, Cl. 524-378.000.
Sengupta, Subrata, to University of Miami. Microencapsulated phase change material slurry heat sinks. 5,007,478, Cl. 165-10.000.
Senstad, Ingeborg C.: *See*—
Wergeland, Ivar; Senstad, Ingeborg C.; and Nestaas, Eirik, 5,008,197, Cl. 435-240.240.
Seo, Akikazu: *See*—
Nakano, Takafumi; Seo, Akikazu; Soeda, Hiromitsu; and Sueoka, Kazufumi, 5,007,341, Cl. 101-349.000.
Sequoia Turner Corporation: *See*—
Edmondson, Sherburne M.; and Luna, Carlos E., 5,008,202, Cl. 436-18.000.
Serck Baker Limited: *See*—
Lloyd, David D.; and Michaluk, Peter G., 5,008,014, Cl. 210-512.100.
Serre, Jacques R.: *See*—
Hacault, Michel G. P.; Heurtel, Bertrand J. J. M.; and Serre, Jacques R., 5,007,800, Cl. 416-220.00R.
Set-O-Matic Sales Corp.: *See*—
Mercurio, Leonard, 5,007,519, Cl. 194-230.000.
Setescak, Linda L.: *See*—
Martin, Lawrence L.; and Setescak, Linda L., 5,008,285, Cl. 514-450.000.
Sewell, James S.: *See*—
Look, David C.; Sewell, James S.; Mier, Millard G.; Sizelove, John R.; Walters, Dennis C.; and Dudley, Scott C., 5,008,542, Cl. 250-341.000.
Sexton, Charles D. Spine stretcher and aligner. 5,007,414, Cl. 128-78.000.
SFA, Inc.: *See*—
Swiggard, Edward M., 5,007,980, Cl. 156-620.700.
SGS-Thomson Microelectronics, Inc.: *See*—
Queyssac, Daniel, 5,008,776, Cl. 361-392.000.
SGS-Thomson Microelectronics S.r.l.: *See*—
Palara, Sergio, 5,008,771, Cl. 361-103.000.
Shaffer, Blaine P.; and Haab, William G., to Shaffer, Blaine P. Light source with gradually changing intensity. 5,008,865, Cl. 368-10.000.
Shaffer, David B.: *See*—
Effland, John E.; Gipson, John M.; Shaffer, David B.; and Webber, John C., 5,008,679, Cl. 342-353.000.
Shalaby, Shalaby W.: *See*—
Bezwada, Rao S.; Newman, Hugh D., Jr.; and Shalaby, Shalaby W., 5,007,923, Cl. 606-231.000.
Shalkey, Alex T.: *See*—
Lee, Ho C.; O'Toole, John R.; Shalkey, Alex T.; and Zable, Jack L., 5,007,748, Cl. 400-103.000.
Shang, Jer Y., to United States of America, Energy. Integrated coke, asphalt and jet fuel production process and apparatus. 5,008,005, Cl. 208-407.000.
Shapiro, Alan F., to Shapiro, Alan F.; and Edwardson, David. Self-leveling saw horse. 5,007,502, Cl. 182-155.000.
Sharp, Douglas N.: *See*—
Petigara, Ramesh B.; and Sharp, Douglas N., 5,008,395, Cl. 548-213.000.
Sharp, Harry. Bicycle locking system. 5,007,260, Cl. 70-233.000.
Sharp Kabushiki Kaisha: *See*—
Azuma, Daisuke, 5,008,880, Cl. 370-85.600.
Kaneko, Koji; and Sugino, Yasuyuki, 5,008,769, Cl. 360-130.240.
Koizumi, Satoru, 5,007,600, Cl. 242-194.000.
Nakamura, Makio, 5,008,638, Cl. 331-68.000.
Numata, Tomiyuki; Iwaki, Takashi; Kojima, Kunio; and DeGuchi, Toshihisa, 5,008,888, Cl. 372-29.000.
Tanaka, Toshiyuki; and Minami, Etsuji, 5,008,873, Cl. 369-44.140.
Yamamoto, Osamu; and Yoshida, Toshihiko, 5,007,694, Cl. 350-96.140.
Yoshifusa, Koji; and Yokota, Taizo, 5,007,713, Cl. 350-286.000.
Sharp Packaging, Inc.: *See*—
Scarberry, Paul W.; Kazemba, Rodney L.; and Hestekin, Ralph A., 5,007,744, Cl. 383-37.000.
Shaw, James D., to Eastman Kodak Company. Analyzers using linear sample trays with random access. 5,008,082, Cl. 422-65.000.
Shea, Robert H.: *See*—
Giannetti, John; Sleve, Jerry F.; and Shea, Robert H., 5,007,627, Cl. 271-35.000.
Shell, John W., to DepoMed Systems, Inc. Sustained-release oral drug dosage form. 5,007,790, Cl. 424-451.000.
Shell Oil Company: *See*—
Corley, Larry S., 5,007,548, Cl. 220-3.000.
Keijsper, Johannes J.; Mackay, Munro; and Post, Martin F. M., 5,008,094, Cl. 423-328.000.
Moore, Boyd B., 5,007,277, Cl. 72-379.200.
Powell, Joseph B.; and Uzelmeier, Christopher W., 5,008,470, Cl. 568-727.000.
Slaugh, Lynn H., 5,008,480, Cl. 585-323.000.
Smegal, John A.; Ryan, Robert C., and Nash, Richard M., 5,008,003, Cl. 208-254.00H.
Sherlock, Thomas M.: *See*—
Blau, David A.; Meadows, John; Sherlock, Thomas M.; Stengel, Fred; Studholme, Robert M.; Wada, Kenneth R.; and Kepner, Christopher J., 5,008,081, Cl. 422-64.000.
Sherwin, Martin B.; and Su, Jow-Lih, to W. R. Grace & Co.-Conn. Integrated process for the production of aminoacetonitriles. 5,008,428, Cl. 558-346.000.
Shiba, Masataka: *See*—
Tanaka, Tsutomu; Oshida, Yoshitada; Shiba, Masataka; Nakashima, Naoto; and Funatsu, Ryuichi, 5,008,702, Cl. 355-52.000.
Shibanai, Tomoo: *See*—
Ohara, Tsunemasa; and Shibanai, Tomoo, 5,008,605, Cl. 318-630.000.
Shibata, Kazuo; and Komuro, Toshio, to NEC Corporation. Signal generating circuit free from malfunction based on noise. 5,008,567, Cl. 307-443.000.
Shibata, Masabumi; Ishiyama, Akira; and Takemoto, Takeshi, to Hitachi, Ltd. Method and apparatus for transferring addresses and information in a buffer memory and a common main storage device. 5,008,817, Cl. 364-200.000.
Shibata, Takehiko: *See*—
Shimizu, Katsuichi; Shibata, Takehiko; Yokomizo, Yoshikazu; Suzuki, Akira; Murakami, Koichi; Yoshida, Tadashi; Tsukada, Masaharu; Nagashima, Nao; and Miyagi, Ken, 5,008,760, Cl. 358-451.000.
Shibata, Uichi: *See*—
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Shibata, Yoshimasa: *See*—
Bekki, Katsutoshi; Kondo, Kazuo; Shibata, Yoshimasa; and Niwa, Shigeo, 5,007,932, Cl. 623-18.000.
Shiber, Samuel, to Surgical Systems & Instruments, Inc. Rotary-catheter for atherectomy. 5,007,896, Cl. 604-22.000.
Shibuya, Akira: *See*—
Kuramochi, Wataru; Tsuruoka, Yoshiaki; Saitou, Norikazu; Shibuya, Akira; and Yamashita, Shuichi, 5,008,552, Cl. 235-483.000.
Shieh, Puh: *See*—
Loh, Kuo-Liang; Shieh, Puh; Chao, Y. S.; and Chuang, Tsu-Kung, 5,008,435, Cl. 560-24.000.
Shields, Jack W. Intravenous catheter insertion device. 5,007,901, Cl. 604-110.000.
Shigaki, Takao; and Shimazaki, Osamu, to Fuji Photo Film Co., Ltd. Dot signal conversion method. 5,008,742, Cl. 358-79.000.
Shih, Jenn S.: *See*—
Dandreaux, Gary; Login, Robert B.; Merianos, John J.; Garelick, Paul; Plochocka, Krystyna; Negrin, Max; and Shih, Jenn S., 5,008,367, Cl. 528-326.000.
Shiida, Masahiro: *See*—
Ishida, Masahiko; Yamakawa, Nobuaki; and Shiida, Masahiro, 5,007,160, Cl. 29-753.000.
Shikoku Kakoki Co., Ltd.: *See*—
Wakabayashi, Shigeru; Shimokawa, Masao; and Takahashi, Masaki, 5,007,889, Cl. 493-316.000.
Shim, Joosup: *See*—
Garwood, William E.; Le, Quang N.; Shim, Joosup; and Wong, Stephen S., 5,008,460, Cl. 585-11.000.
Shimada, Junichi: *See*—
Minoura, Jun; Takahahi, Shigeyuki; Kato, Hisaki; Ito, Toshiyasu; Mori, Takaaki; Kato, Mamoru; Shimada, Junichi; and Okabayashi, Katsuaki, 5,007,718, Cl. 350-357.000.
Shimada, Yasuomi: *See*—
Tomoda, Haruhisa; and Shimada, Yasuomi, 5,008,872, Cl. 369-32.000.
Tomoda, Haruhisa; and Shimada, Yasuomi, 5,008,875, Cl. 369-85.000.
Shimamoto, Hiroshi; Suzaki, Hideyuki; Yamaguchi, Yukio; and Kawano, Atsushi, to Omron Tateisi Electronics Co. Object detecting switch device. 5,008,862, Cl. 367-105.000.
Shimano, Masami; and Sano, Atuhiro, to Fuji Photo Film Co., Ltd. Length measuring apparatus. 5,007,739, Cl. 356-383.000.
Shimazaki, Osamu: *See*—
Shigaki, Takao; and Shimazaki, Osamu, 5,008,742, Cl. 358-79.000.
Shimco, Inc.: *See*—
Blechschmidt, James L.; Johnson, Robert D.; and Powell, Robert F., 5,007,658, Cl. 280-661.000.

Shimizu, Akio: *See*—
Mikamo, Hisanobu; Odani, Noboru; and Shimizu, Akio, 5,008,152, Cl. 428-423.100.
Shimizu, Giichiro: *See*—
Wakatsuki, Yoshio; Okuyama, Toshiharu; Takeuchi, Hajime; Shimizu, Misao; and Shimizu, Giichiro, 5,008,665, Cl. 340-870.260.
Shimizu, Haruhito: *See*—
Yamazaki, Shuntaro; Ono, Takashi; and Shimizu, Haruhito, 5,007,693, Cl. 350-96.130.
Shimizu, Katsuichi; Shibata, Takehiko; Yokomizo, Yoshikazu; Suzuki, Akira; Murakami, Koichi; Yoshida, Tadashi; Tsukada, Masaharu; Nagashima, Nao; and Miyagi, Ken, to Canon Kabushiki Kaisha. Image processing system. 5,008,760, Cl. 358-451.000.
Shimizu, Minoru, to Tochigifujisangyo Kabushiki Kaisha. Viscous coupling apparatus. 5,007,515, Cl. 192-58.00A.
Shimizu, Misao: *See*—
Wakatsuki, Yoshio; Okuyama, Toshiharu; Takeuchi, Hajime; Shimizu, Misao; and Shimizu, Giichiro, 5,008,665, Cl. 340-870.260.
Shimizu, Nobuaki; and Kezuka, Hiroaki, to Idemitsu Kosan Company Limited. Process for the production of glycol monoesters. 5,008,445, Cl. 560-243.000.
Shimizu, Sadami: *See*—
Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji; Shimizu, Sadami; Sato, Masakatsu; and Tamabayashi, Hanzo, 5,008,469, Cl. 568-722.000.
Shimizu, Sakayu: *See*—
Yamada, Hideaki; Tani, Yoshiki; Shimizu, Sakayu; and Shiozaki, Shozo, 5,008,188, Cl. 435-88.000.
Shimizu, Yoshiaki: *See*—
Ino, Kazuo; Shimizu, Yoshiaki; Okuda, Hiroyuki; Ishihara, Kousou; and Ogura, Takashi, 5,007,158, Cl. 29-603.000.
Shimmyo, Takashi, to Kabushiki Kaisha Toshiba. Casing structure. 5,008,487, Cl. 174-35.00R.
Shimoda, Isamu: *See*—
Kawakami, Eigo; Ozawa, Kunitaka; Uda, Koji; Shimoda, Isamu; and Uzawa, Shunichi, 5,008,703, Cl. 355-53.000.
Shimokawa, Masao: *See*—
Wakabayashi, Shigeru; Shimokawa, Masao; and Takahashi, Masaki, 5,007,889, Cl. 493-316.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Inomata, Hiroshi, 5,008,307, Cl. 523-220.000.
Kokubo, Hiroyasu; Sekigawa, Fujio; Chiba, Tohru; and Onda, Yoshiro, 5,008,113, Cl. 424-480.000.
Suzuki, Akio; Kishita, Hirofumi; Sonegawa, Shigehisa; Matumura, Masaaki; and Hoashimoto, Takeshi, 5,007,726, Cl. 351-41.000.
Takeda, Yoshihumi; Takamizawa, Minoru; and Hayashida, Akira, 5,008,348, Cl. 525-474.000.
Shin-Etsu Handotai Company Limited: *See*—
Ibe, Hiroyuki; and Mori, Takashi, 5,007,204, Cl. 51-165.770.
Shinada, Masayuki; Ikesue, Masumi; Kikuno, Mitsutoyo; and Murai, Tatsuya, to Ricoh Company, Ltd. Document recycling copier for copying documents of varying sizes. 5,008,709, Cl. 355-309.000.
Shine, John: *See*—
Rolfe, Barry G.; Shine, John; Scott, Kieran F.; and Hennecke, Hauke, 5,008,194, Cl. 435-172.300.
Shinnoh, Nobuo: *See*—
Kanai, Toshiyuki; and Shinnoh, Nobuo, 5,008,060, Cl. 264-255.000.
Shinoda, Akira, to Brother Kogyo Kabushiki Kaisha. Signal line connecting structure for a keyboard of electronic apparatus. 5,007,849, Cl. 439-165.000.
Shinohara, Mahito; and Yonehara, Takao, to Canon Kabushiki Kaisha. Method for making a photoelectric conversion device using an amorphous nucleation site. 5,008,206, Cl. 437-3.000.
Shinohara, Tadashi: *See*—
Iwata, Hitoshi; Noguchi, Kazumi; Nishiyama, Toshikazu; and Shinohara, Tadashi, 5,008,767, Cl. 360-103.000.
Shinozuka, Tokihito, to Paramount Bed Co., Ltd. Cushioning material for mattresses. 5,008,141, Cl. 428-182.000.
Shinzawa, Kouichi: *See*—
Takano, Tsunesuke; and Shinzawa, Kouichi, 5,008,505, Cl. 200-531.000.
Shiojima, Isao: *See*—
Gotoh, Hiroshi; Kusakata, Shigeru; and Shiojima, Isao, 5,008,238, Cl. 503-217.000.
Shionogi & Co., Ltd.: *See*—
Narisada, Masayuki; Ohtani, Mitsuaki; Watanabe, Fumihiko; and Kawata, Kyozo, 5,008,409, Cl. 549-463.000.
Shiozaki, Shozo: *See*—
Yamada, Hideaki; Tani, Yoshiki; Shimizu, Sakayu; and Shiozaki, Shozo, 5,008,188, Cl. 435-88.000.
Shipley Company Inc.: *See*—
Bladon, John J., 5,007,990, Cl. 204-15.000.
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Bierbaum, Thomas; and Hain, Johann, 5,007,831, Cl. 433-114.000.
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Rose, James W.; and Sitnik, Theresa A., 5,008,049, Cl. 264-4.000.

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Dolfsma, Hendrik; and van Engelenburg, Hendrik, 5,008,623, Cl. 324-262.000.

Skinner, John A., to De La Rue Systems, Ltd. Apparatus for sensing sheets. 5,007,628, Cl. 271-263.000.

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Block, Michael J.; Kelley, Arnold E.; and Skripek, Milan, 5,007,987, Cl. 201-17.000.

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Matsunaga, Douglas S.; Slabowski, Jan W.; and Marecki, Tadeusz, 5,007,272, Cl. 72-226.000.

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Mason, Scott C.; and Slutz, Robert A., 5,007,844, Cl. 439-68.000.

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Branovich, Louis E.; Eckart, Donald W.; Smith, Bernard; and Freeman, Gerard, 5,007,874, Cl. 445-50.000.

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Enright, Dorothy P.; Dye, William M.; Smith, F. Martin; and Perricone, Alphonse C., 5,007,489, Cl. 175-65.000.

Smith, Gerald B.: *See—*
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D'Hoore, Terence P.; and Smith, Mark L., 5,007,201, Cl. 49-348.000.

Smith, Raymond A.: *See—*
Davies, Paul M.; and Smith, Raymond A., 5,008,015, Cl. 210-634.000.

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Freed, W. Wayne; and Smith, Robert M., 5,007,766, Cl. 405-24.000.

Smith, Ronald T.: *See—*
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Defibaugh, George R.; Myers, Earl C., Jr.; and Smith, Steven G., 5,007,862, Cl. 439-607.000.

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Smith, Todd S., to Boehringer Mannheim Corporation. Porous coated prosthesis. 5,007,931, Cl. 623-23.000.

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Riddick, Wayne T.; and Smith, Vincent F., Jr., 5,008,338, Cl. 525-177.000.

SmithKline Beckman Corporation: *See—*
Bender, Paul E.; Lantos, Ivan; McGuire, Michael A.; Pridgen, Lendon N.; and Winicov, Herbert B., 5,008,390, Cl. 546-199.000.

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Smolley, Robert, to TRW Inc. Integrated-circuit chip interconnection system. 5,007,841, Cl. 439-66.000.

Smolley, Robert, to TRW Inc. High-density contact area electrical connectors. 5,007,843, Cl. 439-66.000.

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Chollet, Charles C., 5,007,953, Cl. 71-77.000.

Snee, Thomas M. Water purification system. 5,007,994, Cl. 204-240.000.

Sninsky, John J.; Kwok, Shirley Y.; and Mack, David H., to Cetus Corporation. Detection of AIDS associated virus by polymerase chain reaction. 5,008,182, Cl. 435-5.000.

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Nakayama, Hitoshi, 5,007,242, Cl. 62-3.200.
Tanaka, Maki; Tojima, Teiichi; Dousako, Shun-ichi; and Tatsumi, Kiyoshi, 5,008,120, Cl. 426-74.000.

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Gustafsson, Par; Sobel, Jarl; and Ornholmer, Lars, 5,007,295, Cl. 73-862.690.

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Lacombe, Alain, 5,007,508, Cl. 188-251.00A.

Societe Manzoni Bouchot: *See—*
Manzoni, Stephane, 5,007,725, Cl. 350-633.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.": *See—*
Hacault, Michel G. P.; Heurtel, Bertrand J. J. M.; and Serre, Jacques R., 5,007,800, Cl. 416-220.00R.

Societe Nationale Industrielle et Aerospatiale: *See—*
Koehler Bertrand; Manil, Emmanuel; and Chapellier, Jacques, 5,008,606, Cl. 318-649.000.
Mouille, Rene L.; and Suzzi, Robert J., 5,007,799, Cl. 416-104.000.

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Pinard, Jean C.; Jacquard, Bernard; and Besancon, Andre , 5,008,828, Cl. 364-474.280.

Soeda, Hiromitsu: *See—*
Nakano, Takafumi; Seo, Akikazu; Soeda, Hiromitsu; and Sueoka, Kazufumi, 5,007,341, Cl. 101-349.000.

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Dahlen, John M.; Chhabra, Narender K.; Araujo, Richard K.; Scholten, James R.; Reid, Robert W.; and Soikkeli, Matti, 5,007,285, Cl. 73-170.00A.

Solimeno, Salvatore: *See—*
Cutolo, Antonello; Solimeno, Salvatore; and Madey, John M. J., 5,007,717, Cl. 350-353.000.

Soltech, Inc.: *See—*
Nelson, Thomas E., 5,007,226, Cl. 52-809.000.

Soltys, Josef: *See—*
Tomantschger, Klaus; and Soltys, Josef, 5,008,162, Cl. 429-34.000.

Solvay & Cie: *See—*
Wairaevens, Rene ; Franklin, James; and Yernaux, Jean-Marie, 5,008,474, Cl. 570-168.000.

Solvay & Cie (Societe Anonyme): *See—*
Delcommune, Luc; and Ghyselinck, Philippe, 5,007,939, Cl. 623-66.000.

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Ibe, Hiromitu; Akutagawa, Ichiro; and Matsuzaki, Kunimitsu, 5,008,309, Cl. 523-442.000.

Somfai, Eva: *See—*
Ecsery, Zoltan; Knoll, Jozsef; Somfai, Eva; Torok, Zoltan; Szinnyei, Eva; and Mozsolits, Karoly, 5,008,292, Cl. 514-654.000.

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Janssens, Frans E.; Kennis, Ludo E. J.; Sommen, Francois M.; and Dierckx, Ann C. J., 5,008,268, Cl. 514-272.000.

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Hafla, Dietmar F.; and Sommer, Guenther, 5,007,314, Cl. 82-120.000.

Sommer, Holger T., to Pacific Scientific Company. Particle size measuring system with automatic dilution of sample. 5,007,297, Cl. 73-865.500.

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Avot, Jean-Pierre, 5,007,550, Cl. 220-8.000.

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Suzuki, Akio; Kishita, Hirofumi; Sonegawa, Shigehisa; Matumura, Masaaki; and Hoashimoto, Takeshi, 5,007,726, Cl. 351-41.000.

Soni, Inderjit S.: *See*—
Crompton, Charles E.; Kazi, Abdulla M. Z.; and Soni, Inderjit S., 5,008,036, Cl. 252-313.100.

Soni, Pravin: *See*—
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Sony Corporation: *See*—
Chigasaki, Hiroyuki, 5,008,766, Cl. 360-96.500.
Hirumi, Yasushi, 5,008,837, Cl. 364-519.000.
Iwahashi, Yuji, 5,007,596, Cl. 242-71.800.
Ohki, Hiroshi; Kobayashi, Shoei; and Wada, Takuya, 5,008,521, Cl. 235-454.000.
Sato, Kazuhiro, 5,008,955, Cl. 455-181.000.
Takayama, Jun; Ninomiya, Takeshi; Fujita, Tadao; and Inaba, Yoshiaki, 5,008,668, Cl. 341-83.000.

Sorensen, Jens O., to Primtec. Injection-molding dimension-control and clamp-reduction. 5,008,064, Cl. 264-308.000.

Soto, Jorge; Anand, Joginder N.; and Peffley, Richard D., to Dow Chemical Company, The. Polyurethane-urea resins with incorporated hydrophobic microparticle fillers. 5,008,325, Cl. 524-504.000.

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Spacesaver Corporation: *See*—
Muth, James C., 5,007,351, Cl. 105-101.000.

Spahni, Milton D., Jr.: *See*—
Gunn, Charles L.; Davis, Harold; Spahni, Milton D., Jr.; and Wanless, Ronald H., 5,007,541, Cl. 206-611.000.

Span-America Medical Systems, Inc.: *See*—
Raburn, Richard W.; and Schaefer, Daniel J., 5,007,124, Cl. 5-481.000.

Spang, Peter; Neumann, Peter; Wagenblast, Gerhard; and Trauth, Hubert, to BASF Aktiengesellschaft. N-substituted benzimidazole-2-carboxanilides. 5,008,397, Cl. 548-331.000.

Spear, Kenneth J.; and Fowler, Ronald R., to O. Ames Co. Hose reel assembly. 5,007,598, Cl. 242-86.200.

Spector, Donald. Microwave-heatable air-freshener package. 5,007,529, Cl. 206-0.500.

Spectra-Physics, Inc.: *See*—
Bobba, Mohan L.; and Nojiri, Howard H., 5,007,691, Cl. 350-6.700.
Taussig, Andrew P.; and Isaacs, Blake L., 5,008,518, Cl. 235-383.000.

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Maathuis, Antonnis G.; Spielmann, Jurgen; Beer, Klaus; and Oare, Thomas R., 5,007,974, Cl. 156-117.000.

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Hall, Robert E.; Spolek, Graig A.; Wasser, John H.; and Butts, Nelson L., 5,007,404, Cl. 126-77.000.

Sport Maska Inc.: *See*—
Laberge, Raymond; and Beauregard, Robert, 5,007,108, Cl. 2-2.000.

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Gulick, James D., 5,007,647, Cl. 273-213.000.

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Ulmer, Edward A., Jr., 5,008,611, Cl. 324-96.000.

SRI International: *See*—
Blum, Yigal D.; and Laine, Richard M., 5,008,422, Cl. 556-412.000.

SS Pharmaceutical Co., Ltd.: *See*—
Yokoi, Koichi; Irinoda, Kazuhiko; Kohya, Hidehiko; Sato, Susumu; and Katori, Tatsuhiko, 5,008,419, Cl. 556-137.000.

SSMC Inc.: *See*—
Hiratsuka, Katsuo; Odaka, Yoshiyuki; and Yoshida, Takeshi, 5,007,356, Cl. 112-68.000.
Kawakubo, Kiyoshi; and Sato, Shuichi, 5,007,358, Cl. 112-235.000.

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van der Schoot, Jelle, 5,007,785, Cl. 414-331.000.

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Raible, Karl, 5,008,018, Cl. 210-717.000.

Stack, Dennis P., to Union Oil Company of California. Process for preparing a fast cure, zero formaldehyde binder for cellulose. 5,008,326, Cl. 524-519.000.

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Russay, Thomas; and Stacy, Carl W., 5,008,658, Cl. 340-784.000.

Stafford, Trevor G., to British Gas Corporation. Method for joining polyolefin pipes by fusion. 5,007,767, Cl. 405-154.000.

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Oldfelt, Sven; and Stahl, Gary L., 5,007,117, Cl. 4-432.000.

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Hopfensperger, Reinhold; and Eichhorn, Werner, 5,007,801, Cl. 416-223.00R.

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Brazdil, James F., Jr.; Toft, Mark A.; and Glaeser, Linda C., 5,008,427, Cl. 558-319.000.
Giordano, Paul J.; and Smierciak, Richard C., 5,008,135, Cl. 427-386.000.

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Eberle, Jurg; and Stauber, Hans-Ulrich, 5,007,629, Cl. 271-277.000.

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STC plc: *See*—
Hale, Peter G.; and Russell, John N., 5,007,703, Cl. 350-96.230.

Steelcase Inc.: *See*—
DeKraker, Larry, 5,007,678, Cl. 297-353.000.

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Husler, Rinaldo; Klingert, Bernd; Rembold, Manfred; and Steiner, Eginhard, 5,008,302, Cl. 522-14.000.

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Gunther, Bernd-Rainer; Losch, Rainer; and Steiner, Klaus, 5,008,394, Cl. 548-121.000.

Steinke, David M.: *See*—
Satterfield, Marshall G.; Steinke, David M.; and Blankenship, Michael, 5,007,976, Cl. 156-222.000.

Steinmeyer, Peter A., to United States of America, Energy. Diffractometer data collecting method and apparatus. 5,008,909, Cl. 378-71.000.

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Blau, David A.; Meadows, John; Sherlock, Thomas M.; Stengel, Fred; Studholme, Robert M.; Wada, Kenneth R.; and Kepner, Christopher J., 5,008,081, Cl. 422-64.000.

Sterner, Hakan: *See*—
Schulte, Burkart; Sterner, Hakan; Wetzka, Gerhard; and Hardt, Norbert, 5,007,213, Cl. 52-29.000.

Sterzer, Fred, to MMTC, Inc. Catheters for treating prostate disease. 5,007,437, Cl. 428-786.000.

Steurer, Andrew M.: *See*—
Wadhwa, Lachhman; and Steurer, Andrew M., 5,008,316, Cl. 524-230.000.

Stevens, Eugene H.; and Utlaut, Mark W., to Hughes Aircraft Company. Signal generator for use in industrial positioning systems. 5,008,602, Cl. 318-561.000.

Stewart, Charles L. Billet pre-piercer apparatus and method. 5,007,274, Cl. 72-254.000.

Stewart, John F.: *See*—
Groswith, Charles T., III; Phipps, Richard D.; Lathrop, Robert L., Jr.; Stewart, John F.; and Kaufmann, Rick J., 5,007,782, Cl. 412-40.000.

Stewart, John S. S. Breathing apparatus. 5,007,421, Cl. 128-204.180.

Stewart, Ray F.: *See*—
Nyberg, Eric D.; Klingman, Ken A.; Curtis, Jeff; and Stewart, Ray F., 5,007,989, Cl. 204-1.110.

Stewart, Robert E.; and Fersht, Samuel N., to Litton Systems, Inc. Three axis inertial measurement unit with counterbalanced, low inertia mechanical oscillator. 5,007,289, Cl. 73-510.000.

STFI: *See*—
Engstrand, Per O.; Hammar, Lars-Ake; Htun, Myat T.; and Pettersson, Rune L., 5,007,985, Cl. 162-26.000.

Sticht, Walter. Handling system for workpieces. 5,007,796, Cl. 414-751.000.

Stiehler, Wayne E.: *See*—
Diehl, Conrad; Smart, David C.; and Stiehler, Wayne E., 5,008,692, Cl. 354-173.100.

Still, Gregory S.: *See*—
Huang, Kevin C.; Kutz, Karl H.; McNamara, Timothy J.; Seals, Victoria E.; and Still, Gregory S., 5,008,885, Cl. 371-3.000.

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von Erichsen, Volker, 5,007,456, Cl. 137-601.000.
Stoltefuss, Jurgen: *See*—
Franckowiak, Gerhard; Stoltefuss, Jurgen; Bechem, Martin; Gross, Rainer; Kayser, Michael; Hebisch, Siegbert; and Schramm, Matthias, 5,008,279, Cl. 514-354.000.
Stone, Kevin R., to ReGen Corporation. Prosthetic meniscus. 5,007,934, Cl. 623-20.000.
Storage Technology Corporation: *See*—
Fries, William J.; Kleinschnitz, Donald; and Nelson, T. Craig, 5,008,808, Cl. 364-200.000.
Storz Instrument Company: *See*—
Kleinberg, Larry K., 5,007,723, Cl. 350-508.000.
Stout, James C., to Honeywell Inc. Fiber optic reflective tree architecture. 5,007,699, Cl. 350-96.160.
Stracher, Alfred; and Kesner, Leo. Carnitine directed pharmaceutical agents. 5,008,288, Cl. 514-535.000.
Straeter, Joseph G.: *See*—
Weder, Donald E.; Straeter, William F.; Straeter, Joseph G.; Craig, Franklin J.; Donnelly, Wilma M.; and Redditt, Jack W., 5,007,229, Cl. 53-397.000.
Straeter, William F.: *See*—
Weder, Donald E.; Straeter, William F.; Straeter, Joseph G.; Craig, Franklin J.; Donnelly, Wilma M.; and Redditt, Jack W., 5,007,229, Cl. 53-397.000.
Strasser, William E.: *See*—
Scherer, Dieter; and Strasser, William E., 5,008,631, Cl. 330-51.000.
Straub, Hermann, to Sulzer Brothers Limited. Plant comprising a nuclear reactor, more particularly a control rod system for nuclear reactor plant. 5,008,068, Cl. 376-230.000.
Strauss, Richard F.; Fiacco, Richard A.; Bordbar, Hosrow T.; Chen, Caesar C.; and Quiroz, David, to Thomas & Betts Corporation. Strippable electrically shielded cable. 5,008,490, Cl. 174-36.000.
Streck Laboratories, Inc.: *See*—
Ryan, Wayne L., 5,008,201, Cl. 436-10.000.
Streicher, Gunter: *See*—
Martinelli, Bruno; Ghezzi, Markus; and Streicher, Gunter, 5,007,941, Cl. 8-436.000.
Streller, Ilse: *See*—
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; Hoefke, Wolfgang; Arndts, Dietrich; and Streller, Ilse, 5,008,273, Cl. 514-301.000.
Stryker Corporation: *See*—
Evans, James A., 5,007,917, Cl. 606-170.000.
Stuart Jacobson Associates, Inc.: *See*—
Beasley, John C.; and Dinand, Pierre F., 5,007,540, Cl. 206-581.000.
Studholme, Robert M.: *See*—
Blau, David A.; Meadows, John; Sherlock, Thomas M.; Stengel, Fred; Studholme, Robert M.; Wada, Kenneth R.; and Kepner, Christopher J., 5,008,081, Cl. 422-64.000.
Studiengesellschaft Kohle mbH: *See*—
Lehmkuhl, Herbert; and Mehler, Klaus-Dieter, 5,007,991, Cl. 204-58.500.
Stuhlmacher, John A., to McGill Manufacturing Company, Inc. Switch with colored indicator cap. 5,008,503, Cl. 200-308.000.
Sturdivant, Linda D.: *See*—
Wang, Dou-Mei; Sturdivant, Linda D.; Biemer, Thomas A.; and Mink, Ronald, 5,008,199, Cl. 435-240.270.
Sturm, Walter. Ladder levelling device with locking means. 5,007,503, Cl. 182-202.000.
Stutz, William H., Jr., to Siemens-Pacesetter, Inc. Device for adapting a pacemaker lead to a pacemaker. 5,007,864, Cl. 439-651.000.
Su, Jow-Lih: *See*—
Sherwin, Martin B.; and Su, Jow-Lih, 5,008,428, Cl. 558-346.000.
Su, Jy-hong: *See*—
Jachmann, Emil F.; Saltzman, Jeremy; Chamberlin, David B.; D'Agosto, Nicholas A.; Harris, Mark; and Su, Jy-hong, 5,008,835, Cl. 364-513.500.
Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: *See*—
Christ, Michael; and Teichmann, Wolfgang, 5,007,180, Cl. 34-32.000.
Sueoka, Kazufumi: *See*—
Nakano, Takafumi; Seo, Akikazu; Soeda, Hiromitsu; and Sueoka, Kazufumi, 5,007,341, Cl. 101-349.000.
Suffern, Robert C.: *See*—
Wallach, Clifford H.; Suffern, Robert C.; and Walsh, Dale M., 5,008,901, Cl. 375-8.000.
Sugihara, Junichi: *See*—
Hashimoto, Ryusuke; Iwata, Mitsuru; Sugihara, Junichi; and Iwase, Minoru, 5,008,053, Cl. 264-60.000.
Sugimoto, Kazuaki; Nishijima, Tomio; Inoue, Teruhisa; Sugimoto, Yoshihiko; Suzuki, Masashi; and Matsushita, Izumi, to Tokyo Electric Co., Ltd. Printer with sheet feeding apparatus. 5,007,340, Cl. 101-227.000.
Sugimoto, Tadao: *See*—
Ikegawa, Akihiko; Okazaki, Masaki; and Sugimoto, Tadao, 5,008,181, Cl. 430-572.000.
Sugimoto, Yoshihiko: *See*—
Sugimoto, Kazuaki; Nishijima, Tomio; Inoue, Teruhisa; Sugimoto, Yoshihiko; Suzuki, Masashi; and Matsushita, Izumi, 5,007,340, Cl. 101-227.000.
Sugino, Yasuyuki: *See*—
Kaneko, Koji; and Sugino, Yasuyuki, 5,008,769, Cl. 360-130.240.
Sugiyama, Isao: *See*—
Yamauchi, Hiroshi; Sugiyama, Isao; Saito, Isao; Nomoto, Seiichiro; Kamiya, Takashi; Machida, Yoshimasa; and Negi, Shigeto, 5,008,260, Cl. 514-202.000.
Suk, Eugene J. Electrical outlet boxes and covers therefor. 5,007,549, Cl. 220-3.800.
Sulzer Brothers Limited: *See*—
Gorris, Joannes J. H. M., 5,007,464, Cl. 139-455.000.
Straub, Hermann, 5,008,068, Cl. 376-230.000.
Sumino, Fumio: *See*—
Nakagawa, Masaru; Sumino, Fumio; Hiro, Masaaki; Kashimura, Noboru; and Nagahara, Shin, 5,008,168, Cl. 430-56.000.
Sumitomo Chemical Company, Limited: *See*—
Saito, Noriaki; Kanagawa, Shuichi; and Sakamoto, Hideshi, 5,008,350, Cl. 525-507.000.
Tashiro, Kazuo; and Tanaka, Kunihiko, 5,008,410, Cl. 549-497.000.
Sumitomo Heavy Industries, Ltd.: *See*—
Hara, Hitoshi; and Inoue, Katsutoshi, 5,007,822, Cl. 425-575.000.
Ishimoto, Noriyuki; and Iida, Hirofumi, 5,008,575, Cl. 310-89.000.
Sumitomo Metal Industries Ltd.: *See*—
Nakasuji, Kazuyuki; Hayashi, Chihiro; and Suzushima, Yoshiyuki, 5,007,577, Cl. 228-265.000.
Tomizawa, Atsushi; Inoue, Susumu; and Masui, Takeshi, 5,007,152, Cl. 29-116.200.
Sumitomo Special Metals Co., Ltd.: *See*—
Nakasuji, Kazuyuki; Hayashi, Chihiro; and Suzushima, Yoshiyuki, 5,007,577, Cl. 228-265.000.
Sumoto, Hirofumi: *See*—
Arai, Kiyotaka; Sumoto, Hirofumi; and Ichinomiya, Keizi, 5,008,789, Cl. 362-255.000.
Sun Microsystems, Inc.: *See*—
Jensen, Eric H., 5,008,850, Cl. 364-760.000.
Sunbelt Automated Systems, Inc.: *See*—
Bingman, John W., 5,007,786, Cl. 414-409.000.
Sunden, Gunnel E.: *See*—
Brandstrom, Arne E.; Lindberg, Per L.; and Sunden, Gunnel E., 5,008,278, Cl. 514-338.000.
Sundholm, Goran. Apparatus for flushing small-diameter hydraulic pipe systems and the like. 5,007,444, Cl. 134-102.000.
Sundstrand Corporation: *See*—
Defenbaugh, John F.; and Markunas, Albert L., 5,007,245, Cl. 62-117.000.
Glennon, Timothy F., 5,008,801, Cl. 363-132.000.
Patel, Sunil; Ligon, Robert; and Dhyanchand, P. John, 5,008,797, Cl. 363-43.000.
Sundwiger Eisenhutte Maschinenfabrik Grah & Co.: *See*—
Kummerhoff, Gerhard, 5,007,273, Cl. 72-242.200.
Sung, Song G., to SamSung Electronics Co., Ltd. Parallel and continuous playback circuit for an audio cassette deck of the double-deck type. 5,008,762, Cl. 360-61.000.
Sunkist Growers, Inc.: *See*—
Orman, Charles R.; Johnson, Paul E.; and Adams, Bruce C., 5,007,335, Cl. 99-487.000.
Superlite Builders Supply, Inc.: *See*—
Bengtson, Fred G.; and LoPiccolo, Donald V., 5,007,218, Cl. 52-204.000.
Surash, Robert G.; and Kiehl, Gary G., to Eastman Kodak Company. Treatment of domestic and industrial waste waters. 5,008,020, Cl. 210-751.000.
Surash, Robert G.: *See*—
Kiehl, Gary G.; and Surash, Robert G., 5,008,017, Cl. 210-710.000.
Surgical Systems & Instruments, Inc.: *See*—
Shiber, Samuel, 5,007,896, Cl. 604-22.000.
Surnamer, Andrew D.: *See*—
Tien, Chao-Fong; and Surnamer, Andrew D., 5,007,945, Cl. 55-16.000.
Sussmann, Ricardo S.: *See*—
Burnham, Robert D.; and Sussmann, Ricardo S., 5,008,737, Cl. 357-81.000.
Sutherland, James K.: *See*—
Bu'lock, John D.; Sutherland, James K.; and Donnelly, Michael J., 5,008,383, Cl. 536-4.100.
Sutterlin, Philip H., to International Business Machines Corporation. Temperature compensated feedback circuit for setting and stabilizing amplifier DC bias points. 5,008,632, Cl. 330-256.000.
Suya, Yoshiaki: *See*—
Yazawa, Shigehiko; Ogawa, Toru; Moritomo, Haruo; Suya, Yoshiaki; and Nakayama, Mikio, 5,008,884, Cl. 370-110.100.
Suzaki, Hideyuki: *See*—
Shimamoto, Hiroshi; Suzaki, Hideyuki; Yamaguchi, Yukio; and Kawano, Atsushi, 5,008,862, Cl. 367-105.000.
Suzaki, Kenji: *See*—
Nakajima, Masashi; Tomita, Nobuo; Suzaki, Kenji; Kaneko, Akira; and Sawaki, Mikio, 5,008,455, Cl. 564-300.000.
Suzuki, Akio; Kishita, Hirofumi; Sonegawa, Shigehisa; Matumura, Masaaki; and Hoashimoto, Takeshi, to Shin-Etsu Chemical Co., Ltd. Coated eyeglasses frame member. 5,007,726, Cl. 351-41.000.
Suzuki, Akira: *See*—
Shimizu, Katsuichi; Shibata, Takehiko; Yokomizo, Yoshikazu; Suzuki, Akira; Murakami, Koichi; Yoshida, Tadashi; Tsukada, Masaharu; Nagashima, Nao; and Miyagi, Ken, 5,008,760, Cl. 358-451.000.
Suzuki, Arata; Tyberg, William T.; Banks, George; and Suzuki, Marcia, to Capintec, Inc. Ambulatory physiological evaluation system including cardiac monitoring. 5,007,427, Cl. 128-659.000.

Suzuki, Hiroshi: *See*—
Yamamoto, Ryoichi; and Suzuki, Hiroshi, 5,008,450, Cl. 562-485.000.
Suzuki Jidosha Kogyo Kabushiki Kaisha: *See*—
Okubo, Susumu; and Sasaki, Yutaka, 5,007,870, Cl. 440-89.000.
Suzuki, Kazuo: *See*—
Takahashi, Yasuo; Suzuki, Kazuo; Niimura, Toshinobu; and Kano, Tokio, 5,007,995, Cl. 204-299.00R.
Suzuki, Kenzi: *See*—
Watanabe, Eiji; Horio, Nasakazu; and Suzuki, Kenzi, 5,008,224, Cl. 502-63.000.
Suzuki, Marcia: *See*—
Suzuki, Arata; Tyberg, William T.; Banks, George; and Suzuki, Marcia, 5,007,427, Cl. 128-659.000.
Suzuki, Masashi: *See*—
Sugimoto, Kazuaki; Nishijima, Tomio; Inoue, Teruhisa; Sugimoto, Yoshihiko; Suzuki, Masashi; and Matsushita, Izumi, 5,007,340, Cl. 101-227.000.
Suzuki, Shigehiko; and Tachino, Kenzo, to Mitsubishi Denki Kabushiki Kaisha. Elevator remote-control method. 5,007,506, Cl. 187-101.000.
Suzuki, Takashi: *See*—
Kawachi, Genshiro; Mimura, Akio; Konishi, Nobutake; Ono, Kikuo; and Suzuki, Takashi, 5,008,218, Cl. 437-201.000.
Suzuki, Takayuki, to Canon Kabushiki Kaisha. Thermal transfer recording method. 5,008,683, Cl. 346-1.100.
Suzuki, Tamotsu: *See*—
Tanaka, Seiichi; and Suzuki, Tamotsu, 5,007,390, Cl. 123-180.00T.
Suzuki, Toshihiko: *See*—
Kuze, Tetsuya; Yamashita, Takashi; and Suzuki, Toshihiko, 5,007,472, Cl. 152-546.000.
Suzuki, Yasuyuki: *See*—
Kimura, Tadashi; Matsugi, Tetsuzo; and Suzuki, Yasuyuki, 5,007,809, Cl. 417-371.000.
Suzuki, Yoshikuni: *See*—
Takahashi, Toshihiro; Horaguchi, Tatsuo; Nakamaru, Koichi; and Suzuki, Yoshikuni, 5,008,266, Cl. 514-259.000.
Suzushima, Yoshiyuki: *See*—
Nakasuji, Kazuyuki; Hayashi, Chihiro; and Suzushima, Yoshiyuki, 5,007,577, Cl. 228-265.000.
Suzzi, Robert J.: *See*—
Mouille, Rene L.; and Suzzi, Robert J., 5,007,799, Cl. 416-104.000.
Sved, Robert: *See*—
Kahaney, Alan; and Sved, Robert, 5,007,727, Cl. 351-47.000.
Swanson, Ralph W.; Gagnon, Daniel F.; and Parent, Donald G., to Chapman Corporation. Self-balancing circuit for convection air ionizers. 5,008,594, Cl. 315-111.810.
Swanstrom, Thomas M. Boom-mast coupler for windsurfer. 5,007,361, Cl. 114-98.000.
Swedo, Susan E.; Rapoport, Judith L.; and Leonard, Henrietta L., to United States of America, Health and Human Services. Method of treating trichotillomania and onchyphagia. 5,008,262, Cl. 514-217.000.
Sweeney, Michael: *See*—
Pless, Benjamin; Sweeney, Michael; Winkle, Roger; and Nathan, Anthony, 5,007,422, Cl. 28-419.0PG.
Swiggard, Edward M., to SFA, Inc. Liquid encapsulated zone melting crystal growth method and apparatus. 5,007,980, Cl. 156-620.700.
Swihart, Terence J.: *See*—
Halloran, Daniel J.; Kasprzak, Kenneth A.; Savastano, Stefano G.; and Swihart, Terence J., 5,008,424, Cl. 556-419.000.
Kosal, Jeffrey A.; and Swihart, Terence J., 5,008,349, Cl. 525-477.000.
Swindal, James L.: *See*—
Bullis, Robert H.; and Swindal, James L., 5,008,774, Cl. 361-283.000.
Swinford, Carson B.: *See*—
Lewis, Milton A., Jr.; Mason, Jeffrey S.; Swinford, Carson B.; and Wiseman, Timothy R., Sr., 5,007,112, Cl. 2-79.000.
Synrad, Incorporated: *See*—
Laakmann, Peter, 5,008,894, Cl. 372-38.000.
Synthelabo: *See*—
Rossey, Guy; Ugolini, Antonio; Chekroun, Isaac; Vartanian, Abkar; and Wick, Alexander, 5,008,434, Cl. 560-17.000.
Synthetic Industries, Inc.: *See*—
Freed, W. Wayne; and Smith, Robert M., 5,007,766, Cl. 405-24.000.
Szabo, Tibor; Institoris, Laszlo ; Szejtli, Jozsef; Szente, Lajos; and Jodal, Ildiko , to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Methylated cyclodextrin type compounds and process for preparing same. 5,008,386, Cl. 536-103.000.
Szaniszlo, Steve R.: *See*—
Kurtz, Stuart J.; and Szaniszlo, Steve R., 5,008,056, Cl. 264-130.000.
Szejtli, Jozsef: *See*—
Szabo, Tibor; Institoris, Laszlo ; Szejtli, Jozsef; Szente, Lajos; and Jodal, Ildiko , 5,008,386, Cl. 536-103.000.
Szente, Lajos: *See*—
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Szinnyei, Eva: *See*—
Ecsery, Zoltan; Knoll, Jozsef; Somfai, Eva; Torok, Zoltan; Szinnyei, Eva; and Mozsolits, Karoly, 5,008,292, Cl. 514-654.000.
Szporny, Laszlo: *See*—
Schon, Istvan; Nyeki, Olga; Kisfaludy, Lajos, deceased; Denes, Laszlo; Hajos, Gyorgy; and Szporny, Laszlo, 5,008,246, Cl. 514-18.000.
T. G. & Watson, Inc.: *See*—
Watson, Dean R.; and Gallagher, Thomas E., IV, 5,007,639, Cl. 273-60.00R.
T. T. Boughton & Sons Ltd.: *See*—
Boughton, T. Trafford, 5,007,791, Cl. 414-494.000.
Tachi-S Co. Ltd.: *See*—
Kanai, Shigeru, 5,007,611, Cl. 248-422.000.
Tachibana, Shunro; and Shibata, Uichi, to Tachibana, Shunro; and Meiji Seika Kaisha, Ltd. Endermic application kits for external medicines. 5,007,438, Cl. 128-798.000.
Tachino, Kenzo: *See*—
Suzuki, Shigehiko; and Tachino, Kenzo, 5,007,506, Cl. 187-101.000.
Tada, Masahiro: *See*—
Kashiwadate, Ken; Satake, Yoshikatsu; Kaneko, Takashi; Tada, Masahiro; and Katto, Takayuki, 5,008,370, Cl. 528-481.000.
Tadokoro, Motoo: *See*—
Furukawa, Nobuhiro; Inoue, Kenji; Nogami, Mitsuzo; Kameoka, Seiji; and Tadokoro, Motoo, 5,008,164, Cl. 429-59.000.
Taga, Yasunori; Yamadera, Hideya; Aoki, Keiji; and Hattori, Tadashi, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Nippon Soken Inc. Ceramic substrate having a metallic layer thereon and a process for manufacturing the same. 5,008,149, Cl. 428-336.000.
Taguchi, Masahiro: *See*—
Kondo, Hirosato; Taguchi, Masahiro; Inoue, Yoshimasa; and Sakamoto, Fumio, 5,008,389, Cl. 544-343.000.
Taguchi, Yoshio: *See*—
Sasae, Taiichio; and Taguchi, Yoshio, 5,007,965, Cl. 106-800.000.
Tajima, Kenji; Kushima, Hiroshi; and Yamada, Sadami, to Fuji Photo Film Co., Ltd. Film package and device for loading films. 5,008,694, Cl. 354-277.000.
Tajimi, Michiko: *See*—.
Kitamura, Youichi; and Tajimi, Michiko, 5,008,923, Cl. 379-3.000.
Takagi, Shigeyuki: *See*—
Kamimura, Toshio; and Takagi, Shigeyuki, 5,007,327, Cl. 91-422.000.
Takagi, Shinichi: *See*—
Masuda, Takashi; Hashimoto, Kengiro; Takagi, Shinichi; and Tanaka, Masayuki, 5,007,884, Cl. 474-242.000.
Takagi, Yoshiyuki: *See*—
Katsura, Joji; Takagi, Yoshiyuki; and Watari, Shigeru, 5,008,727, Cl. 357-40.000.
Takahagi, Takayuki: *See*—
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Takahahi, Shigeyuki: *See*—
Minoura, Jun; Takahahi, Shigeyuki; Kato, Hisaki; Ito, Toshiyasu; Mori, Takaaki; Kato, Mamoru; Shimada, Junichi; and Okabayashi, Katsuaki, 5,007,718, Cl. 350-357.000.
Takahashi, Akio: *See*—
Tsukamoto, Jun; and Takahashi, Akio, 5,008,040, Cl. 252-500.000.
Takahashi, Akira, to Fuji Jukogyo Kabushiki Kaisha. Method and apparatus for determining failure of vehicle steering sensing device. 5,008,823, Cl. 364-424.030.
Takahashi, Masaki: *See*—
Wakabayashi, Shigeru; Shimokawa, Masao; and Takahashi, Masaki, 5,007,889, Cl. 493-316.000.
Takahashi, Masatoshi: *See*—
Ryoke, Katsumi; Takahashi, Masatoshi; Hashimoto, Akihiro; and Hasumi, Kazuo, 5,008,147, Cl. 428-323.000.
Takahashi, Nagashige; and Ouchi, Teruo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Bending control device of endoscope. 5,007,406, Cl. 128-4.000.
Takahashi, Noriyoshi: *See*—
Karakida, Kenichi; Yagi, Shigeru; Fukuda, Yuzuru; Nishikawa, Masayuki; Roh, Te N.; Takahashi, Noriyoshi; Ono, Masato; Yokoi, Masaki; and Komori, Yumiko, 5,008,170, Cl. 430-65.000.
Takahashi, Shintaro: *See*—
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Kurosawa, Soichi; Iijima, Katsumi; Iizuka, Nobuyuki; Maeno, Yosimi; Takahashi, Shintaro; Watanabe, Yasuo; and Hiraga, Ryo, 5,008,072, Cl. 420-69.000.
Takahashi, Shuji: *See*—
Okazaki, Takao; Takahashi, Shuji; Iwado, Seigo; Tanaka, Keiji; Yanai, Toshiaki; and Kajino, Hisaki, 5,008,191, Cl. 435-124.000.
Takahashi, Susumu: *See*—
Sakamoto, Koji; Tanzawa, Misao; Iwata, Nobuo; Murayama, Hisao; Takahashi, Susumu; and Komada, Kenya, 5,008,711, Cl. 355-206.000.
Takahashi, Teruyuki; and Kohno, Mitsuru, to Kawasaki Steel Corp. Thermal adhesive coating composition based on epoxy resin, high Tg polymer, amine curing agent and film forming agent. 5,008,308, Cl. 523-406.000.
Takahashi, Toshihiro; Horaguchi, Tatsuo; Nakamaru, Koichi; and Suzuki, Yoshikuni, to Nisshin Flour Milling Co., Ltd. 4(3H)-quinazolinone derivatives and pharmaceutical compositions. 5,008,266, Cl. 514-259.000.
Takahashi, Tsunenori: *See*—
Abe, Tadashi; Aoki, Masahiro; Takahashi, Tsunenori; and Awata, Takeshi, 5,008,329, Cl. 524-798.000.
Takahashi, Yasuo; Suzuki, Kazuo; Niimura, Toshinobu; and Kano, Tokio, to Olympus Optical Co., Ltd. Device for electrofusion of cells. 5,007,995, Cl. 204-299.00R.
Takahashi, Yoshiyuki; Toyofuku, Kunitaka; and Iwasaki, Akiko, to Oji Paper Co., Ltd. Heat-sensitive recording material. 5,008,236, Cl. 503-209.000.

Takamizawa, Minoru: *See—*
Takeda, Yoshihumi; Takamizawa, Minoru; and Hayashida, Akira, 5,008,348, Cl. 525-474.000.

Takano, Akira: *See—*
Kobayashi, Hitoshi; Takano, Akira; Narusawa, Naoharu; Tsukada, Yukihiko; Sakamoto, Hiroshi; Hirano, Masaki; and Ando, Masao, 5,008,710, Cl. 355-202.000.

Takano, Isao, legal representative: *See—*
Mimura, Yoshikazu; Takano, Keiichi, deceased; and Gotou, Tomohisa, 5,008,173, Cl. 430-78.000.

Takano, Keiichi, deceased: *See—*
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Takano, Tadashi: *See—*
Ono, Takeshi; Sakamoto, Masahiro; and Takano, Tadashi, 5,008,607, Cl. 318-696.000.

Takano, Tsunesuke; and Shinzawa, Kouichi, to Daiichi Denso Buhin Co., Ltd. Self-resetting push switch. 5,008,505, Cl. 200-531.000.

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Imaizumi, Masaru; and Takano, Yoshiaki, 5,008,715, Cl. 355-313.000.

Takanobu, Hiroshi, to Hitachi, Ltd. Electron gun and method for manufacturing the same. 5,008,589, Cl. 313-456.000.

Takata, Melvin M.: *See—*
Weiss, Lawrence D.; Caruthers, Douglas W.; Inatomi, Charles T.; Kawan, Joseph C.; Lee, Shan; Marks, Harvey; Meguerdijan, Sarkis A.; Parekh, Dilip J.; Samulon, Alfred S.; Takata, Melvin M.; Tucci, Morris L.; and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.

Takayama, Jun; Ninomiya, Takeshi; Fujita, Tadao; and Inaba, Yoshiaki, to Sony Corporation. Method and apparatus for encoding and decoding data in residue number system. 5,008,668, Cl. 341-83.000.

Take One Marketing Group, Inc.: *See—*
Seidman, Charles B., 5,007,641, Cl. 273-138.00A.

Takeda Chemical Industries, Ltd.: *See—*
Hatanaka, Chitoshi; and Oi, Satoru, 5,008,405, Cl. 549-315.000.
Inoue, Keizo; Nomura, Hiroaki; and Tasaka, Akihiro, 5,008,454, Cl. 564-294.000.

Takeda, Keiko: *See—*
Sasaki, Kazuya; Yoshizawa, Sakae; Inagaki, Shinya; and Takeda, Keiko, 5,007,698, Cl. 350-96.150.

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Takeguchi, Shunsuke: *See—*
Fujita, Yoshiaki; Kawai, Satoshi; and Takeguchi, Shunsuke, 5,007,956, Cl. 75-238.000.

Takemoto, Takeshi: *See—*
Shibata, Masabumi; Ishiyama, Akira; and Takemoto, Takeshi, 5,008,817, Cl. 364-200.000.

Takenoya, Hideaki; and Ebata, Yoshikazu, to Janome Sewing Machine Co., Ltd. Embroidering device for a sewing machine. 5,007,357, Cl. 112-103.000.

Takeuchi, Hajime: *See—*
Wakatsuki, Yoshio; Okuyama, Toshiharu; Takeuchi, Hajime; Shimizu, Misao; and Shimizu, Giichiro, 5,008,665, Cl. 340-870.260.

Takeuchi, Masamichi; and Asai, Yasuo, to Koyo Seiko Co., Ltd. Radial roller bearing. 5,007,747, Cl. 384-450.000.

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Landesman, Barbara T., 5,008,892, Cl. 372-45.000.

Tallan, Michael L.: *See—*
Bly, Sara A.; Farrand, A. Brady; Hodges, Jeffery D.; Kupfer, Michael D.; Lewis, Brian T.; Maybury, William J.; Tallan, Michael L.; and Tom, Stephen B., 5,008,853, Cl. 364-900.000.

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Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji; Shimizu, Sadami; Sato, Masakatsu; and Tamabayashi, Hanzo, 5,008,469, Cl. 568-722.000.

Tamaki, Kuniaki; Sakai, Norio; and Minowa, Kenji, to Murata Manufacturing Co., Ltd. Retainer for chip-type electronic parts. 5,007,534, Cl. 206-329.000.

Tamazawa, Tsuyoshi; and Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Power plant for vehicles. 5,007,307, Cl. 74-606.00R.

Tamiya, Jun: *See—*
Souketani, Koichi; Ito, Yukio; Sasaki, Yoshio; Kurita, Teiji; and Tamiya, Jun, 5,007,773, Cl. 407-27.000.

Tamura, Hifumi: *See—*
Toita, Hiroshi; Tamura, Hifumi; Tobita, Issei; and Iwamoto, Hiroshi, 5,008,537, Cl. 250-309.000.

Tamura, Takashi: *See—*
Hosoda, Takuya; Morishita, Mitsuhiro; and Tamura, Takashi, 5,008,562, Cl. 307-265.000.

Tanabe, Satoru: *See—*
Ohmura, Hiroshi; Tanabe, Satoru; Yoshioka, Junji; and Kanazawa, Hirotaka, 5,007,494, Cl. 180-79.100.

Tanaka, Haruhiko: *See—*
Nakamura, Takashi; Tanaka, Haruhiko; Hyodo, Touru; and Osanai, Yasuhiro, 5,008,601, Cl. 318-268.000.

Tanaka, Hisami: *See—*
Ohmori, Hiroyuki; Tanaka, Hisami; and Okunuki, Masami, 5,008,706, Cl. 355-219.000.

Tanaka, Hitoshi: *See—*
Koshinaka, Masao; Akiyama, Minoru; Tanaka, Hitoshi; and Tomoda, Toshimasa, 5,008,558, Cl. 250-563.000.

Tanaka, Keiji: *See—*
Okazaki, Takao; Takahashi, Shuji; Iwado, Seigo; Tanaka, Keiji; Yanai, Toshiaki; and Kajino, Hisaki, 5,008,191, Cl. 435-124.000.

Tanaka, Kiyoaki: *See—*
Atsumi, Morihiro; and Tanaka, Kiyoaki, 5,008,584, Cl. 313-136.000.

Tanaka, Kunihiko: *See—*
Tashiro, Kazuo; and Tanaka, Kunihiko, 5,008,410, Cl. 549-497.000.

Tanaka, Maki; Tojima, Teiichi; Dousako, Shun-ichi; and Tatsumi, Kiyoshi, to Snow Brand Milk Products Co., Ltd. Method of preparing iron-fortified beverage. 5,008,120, Cl. 426-74.000.

Tanaka, Masayuki: *See—*
Masuda, Takashi; Hashimoto, Kengiro; Takagi, Shinichi; and Tanaka, Masayuki, 5,007,884, Cl. 474-242.000.

Tanaka, Mitsugu; and Kubodera, Seiiti, to Fuji Photo Film Co. Thermal transfer dye donating material. 5,008,232, Cl. 503-227.000.

Tanaka, Nobuhiro, to Kao Corporation. Method for merging goods and apparatus therefor. 5,007,521, Cl. 198-347.400.

Tanaka, Seiichi; and Suzuki, Tamotsu, to Sanshin Kogyo Kabushiki Kaisha. Starting fuel supplying device for internal combustion engine. 5,007,390, Cl. 123-180.00T.

Tanaka, Shinichi: *See—*
Ishibashi, Hiromichi; and Tanaka, Shinichi, 5,008,669, Cl. 341-102.000.

Tanaka, Toshiyuki; and Minami, Etsuji, to Sharp Kabushiki Kaisha. Tilt adjustment mechanism for object lens driving device. 5,008,873, Cl. 369-44.140.

Tanaka, Tsutomu; Oshida, Yoshitada; Shiba, Masataka; Nakashima, Naoto; and Funatsu, Ryuichi, to Hitachi, Ltd. Exposure method and apparatus. 5,008,702, Cl. 355-52.000.

Tandy, John S.: *See—*
Kratky, Zdenek; and Tandy, John S., 5,008,381, Cl. 536-8.000.

Tang, Sang T., to Babcock Display Products, Inc. Screened interconnect system. 5,007,872, Cl. 445-25.000.

Tani, Yoshiki: *See—*
Yamada, Hideaki; Tani, Yoshiki; Shimizu, Sakayu; and Shiozaki, Shozo, 5,008,188, Cl. 435-88.000.

Tanioka, Hiroshi: *See—*
Koizumi, Norihiko; Tanioka, Hiroshi; Toyama, Noboru; Arahara, Kozo; and Yuasa, Toshiya, 5,008,690, Cl. 346-140.00R.

Taniuchi, Akira; Kataoka, Hironori; and Ito, Etsuo, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Cationic herbicides. 5,007,955, Cl. 71-103.000.

Tanooka, Shigeo: *See—*
Yamamoto, Masaji; Tanooka, Shigeo; and Sakai, Toshifumi, 5,007,885, Cl. 475-231.000.

Tanuma, Chiaki; Itsumi, Kazuhiro; Iwase, Nobuo; Ono, Tomio; Kondo, Yuu; and Saito, Kazutaka, to Kabushiki Kaisha Toshiba. Electronic device having a cooling element. 5,008,582, Cl. 310-332.000.

Tanzawa, Misao: *See—*
Sakamoto, Koji; Tanzawa, Misao; Iwata, Nobuo; Murayama, Hisao; Takahashi, Susumu; and Komada, Kenya, 5,008,711, Cl. 355-206.000.

Tarazaga, JoseF.: *See—*
Badia, Antonio R.; and Tarazaga, JoseF., 5,007,380, Cl. 119-53.000.

Tarhay, Leo: *See—*
Haluska, Loren A.; Michael, Keith W.; and Tarhay, Leo, 5,008,320, Cl. 524-361.000.

Tarumi, Niro: *See—*
Sawamoto, Takeyuki; Nomura, Masashi; and Tarumi, Niro, 5,008,354, Cl. 526-246.000.

Tasaka, Akihiro: *See—*
Inoue, Keizo; Nomura, Hiroaki; and Tasaka, Akihiro, 5,008,454, Cl. 564-294.000.

Tashiro, Kazuo; and Tanaka, Kunihiko, to Sumitomo Chemical Company, Limited. Method for producing furfuryl alcohols. 5,008,410, Cl. 549-497.000.

Tatsumi, Kiyoshi: *See—*
Tanaka, Maki; Tojima, Teiichi; Dousako, Shun-ichi; and Tatsumi, Kiyoshi, 5,008,120, Cl. 426-74.000.

Taubitz, Christof: *See—*
Koehler, Hermann; Ebel, Klaus; Karn, Helmut; and Taubitz, Christof, 5,008,398, Cl. 548-342.000.

Taurus Tetraconcepts, Inc.: *See—*
Groswith, Charles T., III; Phipps, Richard D.; Lathrop, Robert L., Jr.; Stewart, John F.; and Kaufmann, Rick J., 5,007,782, Cl. 412-40.000.

Taussig, Andrew P.; and Isaacs, Blake L., to Spectra-Physics, Inc. Data gathering system interface. 5,008,518, Cl. 235-383.000.

Taylor, Arthur: *See—*
Chen, Chao; and Taylor, Arthur, 5,007,922, Cl. 606-228.000.

Taylor, Bryan V. Security device. 5,007,263, Cl. 70-416.000.

Taylor, Dennis R.; and Ungermann, Charles B., to Engelhard Corporation. Process for making acid activated bleaching earth using high susceptibility source clay and novel bleaching earth product. 5,008,226, Cl. 502-81.000.

Taylor, Dennis R.; and Ungermann, Charles B., to Engelhard Corporation. Process for making acid activated bleaching earth using high susceptibility source clay and novel bleaching earth product. 5,008,227, Cl. 502-83.000.

Taylor, Patrick D., to Itex Enterprises, Inc. Apparatus and method for mixing solid or semi-solid wastes with additives. 5,007,590, Cl. 241-25.000.

Taylor, Stewart S., to TriQuint Semiconductor, Inc. High-impedance FET circuit. 5,008,565, Cl. 307-296.700.

Taylor, Tim C.; and McAllister, John A. Method and apparatus for measuring vision blockage resulting from glare. 5,007,730, Cl. 351-243.000.

Tazi, Mohammed; and Plochocka, Krystyna, to GAF Chemicals Corporation. Slurry polymerization of maleic anhydride and acrylic acid in a cosolvent system of ethyl acetate and cyclohexane. 5,008,355, Cl. 526-271.000.

Teasdale, James A., to British Shipbuilders. Construction of large sandwich structures. 5,007,225, Cl. 52-799.000.

Tecnica e Innovationes Ganaderas, S. A.: *See*—
Badia, Antonio R.; and Tarazaga, JoseF., 5,007,380, Cl. 119-53.000.

Tecumseh Products Company: *See*—
Gannaway, Edwin L., 5,007,807, Cl. 417-363.000.

Teetz, Volker: *See*—
Urbach, Hansjorg; Henning, Rainer; Teetz, Volker; Geiger, Rolf; Becker, Reinhard; and Gaul, Holger, 5,008,400, Cl. 548-452.000.

Teichmann, Wolfgang: *See*—
Christ, Michael; and Teichmann, Wolfgang, 5,007,180, Cl. 34-32.000.

Teijin Seiki Company Limited: *See*—
Kamimura, Toshio; and Takagi, Shigeyuki, 5,007,327, Cl. 91-422.000.

Tektronix, Inc.: *See*—
Anderson, Duwayne R.; McMahon, Robert W.; and Rosenow, Barry L., 5,008,545, Cl. 250-358.100.
Knierim, David L.; and Brown, Gary L., 5,008,741, Cl. 358-32.000.

Tel Sagami Limited: *See*—
Asano, Takanobu; Yamaga, Kenichi; and Ohkase, Wataru, 5,007,788, Cl. 414-417.000.

Teledyne Industries, Inc.: *See*—
Kadis, Paul M.; and Pfaff, Susan E., 5,007,276, Cl. 72-351.000.
Morris, Gilbert V., 5,007,369, Cl. 118-56.000.

Telefonaktiebolaget L M Ericsson: *See*—
Dahlin, Steinar J. E. A.; and Ghisler, Walter, 5,008,953, Cl. 455-33.000.

Telschow, Jeffrey E., to Akzo N.V. Process for purifying crude tetrabromobisphenol sulfone by extraction. 5,008,458, Cl. 568-28.000.

Tenbarge, Frank: *See*—
Hedges, Allan; and Tenbarge, Frank, 5,007,966, Cl. 127-34.000.

Tenhunen, Raimo: *See*—
Ingberg, Grels D.; Penttila, Ritva L. A.; Tokola, Reino O.; and Tenhunen, Raimo, 5,008,388, Cl. 540-145.000.

Terada, Yasuharu; and Ishii, Susumu, to Yoshida Kogyo K. K. Slide fastener slider. 5,007,144, Cl. 24-415.000.

Terakawa, Takashige; and Kusakabe, Wataru, to Tokyo Keiki Co., Ltd. Electromagnetic wave shielding panels and wall structure. 5,008,486, Cl. 174-35.0MS.

Tessari, James E.: *See*—
Chinnaswamy, Kumar; Gagliardo, Michael A.; Goodwin, Paul M.; Lynch, John J.; and Tessari, James E., 5,008,886, Cl. 371-40.200.

Tessier, Jean: *See*—
Demassey, Jacques; Demoute, Jean-Pierre; and Tessier, Jean, 5,008,281, Cl. 514-376.000.

Testa, Joseph E.: *See*—
Chow, Ho; and Testa, Joseph E., 5,007,588, Cl. 239-318.000.

Teutsch, Erich O.: *See*—
Barancik, Martin B.; and Teutsch, Erich O., 5,007,818, Cl. 425-144.000.

Tewes, Bernd: *See*—
Messinger, Werner; Trolltsch, Karl; and Tewes, Bernd, 5,007,168, Cl. 30-43.000.

Texas Instruments Incorporated: *See*—
Esquivel, Agerico L., 5,008,722, Cl. 357-23.500.
Gill, Manzur; Lin, Sung-Wei; Cleavelin, C. Rinn; and McElroy, David J., 5,008,721, Cl. 357-23.500.
Krueger, Steven D.; and Amundsen, Michael J., 5,008,807, Cl. 364-200.000.
Redwine, Donald J., 5,008,214, Cl. 437-52.000.
Thatte, Satish M., 5,008,786, Cl. 364-200.000.
Wills, Kendall S.; and Rodriguez, Paul A., 5,008,729, Cl. 357-51.000.

Tezuka, Youjiro: *See*—
Beppu, Osamu; Moribe, Toshihiro; Tezuka, Youjiro; and Chuma, Akira, 5,008,573, Cl. 310-67.00R.

Thackara, John I.; Lipscomb, George F.; Yoon, Hyun-Nam; and De Martino, Ronald N., to Lockheed Missiles & Space Company, Inc. Electro-optic channel waveguide. 5,007,696, Cl. 350-96.140.

Thatte, Satish M., to Texas Instruments Incorporated. Recoverable virtual memory having persistant objects. 5,008,786, Cl. 364-200.000.

Thermo-Electron Web Systems, Inc.: *See*—
Reid, Robert A.; and Goodnow, Ronald F., 5,007,132, Cl. 15-256.530.

Theron, Johannes P.: *See*—
Gebert, Franz J.; Theron, Johannes P.; Gebert, Ralf D. H.; and Gebert, Rudiger H., 5,008,666, Cl. 340-936.000.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile track leveling, lining and tamping machine. 5,007,349, Cl. 104-12.000.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Universal mobile track leveling, lining and tamping machine. 5,007,350, Cl. 104-12.000.

Thill, Bruce P.; and King, Bruce A., to Dow Chemical Company, The. Polyalkyloxazoline-polycarbonate-polyalkyloxazoline triblock copolymer compatibilizer for polycarbonate/polyamide blends. 5,008,347, Cl. 525-433.000.

Thimineur, Raymond J.: *See*—
Raleigh, William J.; Thimineur, Raymond J.; and Zotto, Anthony A., 5,008,103, Cl. 424-66.000.

Thinesen, Tom, to Timex Corporation. Alarm setting program for alarm timepiece with alternate time zone. 5,008,866, Cl. 368-21.000.

Thinking Machines Corporation: *See*—
Hillis, W. Daniel, 5,008,815, Cl. 364-200.000.

Thobe, Nick D.: *See*—
Dammeyer, Ned E.; and Thobe, Nick D., 5,008,604, Cl. 318-587.000.

Thoma, Frank: *See*—
Grohn, Michael; Murwald, Mario; Thoma, Frank; and Hoffmann, Karlheinz, 5,007,401, Cl. 123-509.000.

Thomas & Betts Corporation: *See*—
Strauss, Richard F.; Fiacco, Richard A.; Bordbar, Hosrow T.; Chen, Caesar C.; and Quiroz, David, 5,008,490, Cl. 174-36.000.

Thomas, Brian: *See*—
Chari, Krishnan; Bowman, Wayne A.; and Thomas, Brian, 5,008,179, Cl. 430-546.000.

Thomas, Henry H., Jr. Fiberboard cylindrical container with spirally wound tubular body and closure therefor. 5,007,579, Cl. 229-5.500.

Thomas, John J.: *See*—
Kieren, Roger; Jamison, David A.; and Thomas, John J., 5,008,560, Cl. 307-19.000.

Thomas, John M.: *See*—
Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., 5,008,465, Cl. 568-697.000.

Thomas, Mark A.: *See*—
Wood, Robert S.; and Thomas, Mark A., 5,007,711, Cl. 350-174.000.

Thomas, Stephen M.: *See*—
Siemon, Carl; and Thomas, Stephen M., 5,008,931, Cl. 379-399.000.

Thomason, Paul L.: *See*—
Alieri, Rodiero; and Thomason, Paul L., 5,007,150, Cl. 29-33.00J.

Thomford, Peter J.: *See*—
Miller, Lindy F.; and Thomford, Peter J., 5,008,244, Cl. 514-12.000.

Thompson, Alan M.: *See*—
Forsyth, Donald G. W.; Marshall, Robert W.; and Thompson, Alan M., 5,007,482, Cl. 166-345.000.

Thompson, Carroll R.: *See*—
Walters, William T.; and Thompson, Carroll R., 5,007,291, Cl. 73-640.000.

Thompson, Charles E. Safety shield for double-lock handcuffs. 5,007,257, Cl. 70-16.000.

Thompson, Harold R., to Gillette Company, The. Cosmetic product. 5,007,755, Cl. 401-175.000.

Thomson-CSF: *See*—
Daniel, Jean-Pierre; and Fauchard, Jean-Pierre, 5,007,736, Cl. 356-152.000.
Trigon, Roland; Drabowitch, Serge; and Roger, Joseph, 5,008,677, Cl. 342-17.000.

Thuez, Jean-Luc; and Dehausse, Robert, to A.R.M.I.N.E.S. Installation for air-conditioning by absorption. 5,007,251, Cl. 62-476.000.

Thulke, Wolfgang: *See*—
Amann, Markus-Christian; Baumann, Gerhard; Heinen, Jochen; and Thulke, Wolfgang, 5,008,893, Cl. 372-50.000.

Thurm, Siegfried; Holm, Reimer; Leuschke, Christian; Rathmann, Dietrich; and Schrader, Lutz, to Bayer Aktiengesellschaft. Process for the production of plastic moulded articles with improved weathering resistance. 5,008,148, Cl. 428-336.000.

Tiearney, Thomas C., Jr.: *See*—
Lee, David S.; and Tiearney, Thomas C., Jr., 5,008,918, Cl. 378-144.000.

Tien, Chao-Fong; and Surnamer, Andrew D., to Air Products and Chemicals, Inc. Membranes formed from aromatic polyarylates. 5,007,945, Cl. 55-16.000.

Tiller, Ralph. Exercise device. 5,007,635, Cl. 272-117.000.

Timex Corporation: *See*—
Thinesen, Tom, 5,008,866, Cl. 368-21.000.

Tin, George W., to Vestar, Inc. Vesicle stabilization. 5,008,109, Cl. 424-422.000.

TLV Company, Limited: *See*—
Morii, Takayuki; and Yumoto, Hideaki, 5,007,582, Cl. 236-40.000.

Tobita, Issei: *See*—
Toita, Hiroshi; Tamura, Hifumi; Tobita, Issei; and Iwamoto, Hiroshi, 5,008,537, Cl. 250-309.000.

Tochigifujisangyo Kabushiki Kaisha: *See*—
Shimizu, Minoru, 5,007,515, Cl. 192-58.00A.

Toepperwien, Bernd, to Alfred Teves GmbH. Working piston, in particular for a brake booster. 5,007,329, Cl. 92-98.00D.

Toerner, Ludger: *See*—
Beth, Matthias; Binz, Hansgeorg; and Toerner, Ludger, 5,007,564, Cl. 222-217.000.

Toft, Mark A.: *See*—
Brazdil, James F., Jr.; Toft, Mark A.; and Glaeser, Linda C., 5,008,427, Cl. 558-319.000.

Toita, Hiroshi; Tamura, Hifumi; Tobita, Issei; and Iwamoto, Hiroshi, to Hitachi, Ltd.; and Hitachi Instrument Engineering Co., Ltd. Composite apparatus with secondary ion mass spectrometry instrument and scanning electron microscope. 5,008,537, Cl. 250-309.000.

Tojima, Teiichi: *See*—
Tanaka, Maki; Tojima, Teiichi; Dousako, Shun-ichi; and Tatsumi, Kiyoshi, 5,008,120, Cl. 426-74.000.

Tokizane, Toshiaki; Ito, Yoshiharu; Yamada, Osamu; Masuda, Toshiyuki; and Kuroda, Mitsunobu, to Matsushita Electric Works, Ltd.

Remote supervisory and controlling machine. 5,008,662, Cl. 340-825.060.
Tokola, Reino O.: *See—*
Ingberg, Grels D.; Penttila, Ritva L. A.; Tokola, Reino O.; and Tenhunen, Raimo, 5,008,388, Cl. 540-145.000.
Tokuda, Kanji, to Fuji Photo Film Co., Ltd. Photographic printer. 5,008,701, Cl. 355-35.000.
Tokyo Electric Co., Ltd.: *See—*
Sugimoto, Kazuaki; Nishijima, Tomio; Inoue, Teruhisa; Sugimoto, Yoshihiko; Suzuki, Masashi; and Matsushita, Izumi, 5,007,340, Cl. 101-227.000.
Tokyo Keiki Co., Ltd.: *See—*
Terakawa, Takashige; and Kusakabe, Wataru, 5,008,486, Cl. 174-35.0MS.
Toland, William G.: *See—*
Lapporte, Seymour J.; and Toland, William G., 5,008,451, Cl. 562-891.000.
Tom, Stephen B.: *See—*
Bly, Sara A.; Farrand, A. Brady; Hodges, Jeffery D.; Kupfer, Michael D.; Lewis, Brian T.; Maybury, William J.; Tallan, Michael L.; and Tom, Stephen B., 5,008,853, Cl. 364-900.000.
Tomantschger, Klaus; and Soltys, Josef. Test cell structure. 5,008,162, Cl. 429-34.000.
Tomihashi, Nobuyuki: *See—*
Shirai, Shinji; Negishi, Hiroyuki; Tomihashi, Nobuyuki; and Yamane, Masayuki, 5,008,327, Cl. 524-544.000.
Tominaga, Shinji; and Hashimoto, Takeshi, to Minolta Camera Kabushiki Kaisha. Device for driving shutter. 5,008,699, Cl. 354-457.000.
Tominaga, Takashi; Nishiyama, Souji; Sakuramoto, Takahumi; and Honda, Makoto, to Nitto Denko Corporation. Glass powder adhesive sheet. 5,008,151, Cl. 428-343.000.
Tomita, Nobuo: *See—*
Nakajima, Masashi; Tomita, Nobuo; Suzaki, Kenji; Kaneko, Akira; and Sawaki, Mikio, 5,008,455, Cl. 564-300.000.
Tomiyama, Akira: *See—*
Tomiyama, Tsuyoshi; Tomiyama, Akira; Shirai, Tadashi; Wakabayashi, Shuuichi; Kawai, Tomoyuki; Ueyama, Naoto; and Sonegawa, Motoharu, 5,008,282, Cl. 514-393.000.
Tomiyama, Tsuyoshi; Tomiyama, Akira; Shirai, Tadashi; Wakabayashi, Shuuichi; Kawai, Tomoyuki; Ueyama, Naoto; and Sonegawa, Motoharu, to Kotobuki Seiyaku Co. Ltd. Cyclic guanidine derivatives, anti-ulceratives and methods of manufacturing the same. 5,008,282, Cl. 514-393.000.
Tomizawa, Atsushi; Inoue, Susumu; and Masui, Takeshi, to Sumitomo Metal Industries, Ltd. Variable-crown roll. 5,007,152, Cl. 29-116.200.
Tomoda, Haruhisa; and Shimada, Yasuomi, to Matsushita Electric Industrial Co., Ltd. Optical disc reproduction apparatus which detects maximum audio signal level recorded on an optical disk. 5,008,872, Cl. 369-32.000.
Tomoda, Haruhisa; and Shimada, Yasuomi, to Matsushita Electric Industrial Co., Ltd. Optical disc reproducing apparatus having display indicating program status. 5,008,875, Cl. 369-85.000.
Tomoda, Toshimasa: *See—*
Koshinaka, Masao; Akiyama, Minoru; Tanaka, Hitoshi; and Tomoda, Toshimasa, 5,008,558, Cl. 250-563.000.
Tomosada, Masahiro: *See—*
Inuzuka, Tsuneki; Maeshima, Katsuyoshi; and Tomosada, Masahiro, 5,008,712, Cl. 355-206.000.
Tonkiss, David W., to Joslyn Corporation. Hand operated band bending tool. 5,007,465, Cl. 140-150.000.
Toray Silicone Company, Limited: *See—*
Mine, Katsutoshi; Morita, Yoshitsugu; and Miyamae, Satoshi, 5,008,733, Cl. 357-72.000.
Torii, Katura: *See—*
Nagai, Tetsuji; Torii, Katura; and Ohno, Yoshio, 5,008,842, Cl. 364-551.010.
Torii, Nobutoshi; Mizuno, Hitoshi; and Muraki, Katsuyuki, to Fanuc Ltd. Industrial robot able to set motion conditions depending on posture of installation thereof. 5,008,832, Cl. 364-513.000.
Torii, Yoshimi: *See—*
Kawasaki, Yoshinao; Kawahara, Hironobu; Sato, Yoshiaki; Fukuyama, Ryooji; Nojiri, Kazuo; and Torii, Yoshimi, 5,007,981, Cl. 156-643.000.
Toro Company, The: *See—*
O'Brien, Steven T.; and Kakuk, Jay J., 5,007,855, Cl. 439-411.000.
Torok, Zoltan: *See—*
Ecsery, Zoltan; Knoll, Jozsef; Somfai, Eva; Torok, Zoltan; Szinnyei, Eva; and Mozsolits, Karoly, 5,008,292, Cl. 514-654.000.
Torre, Randall J. Tendon sectioning support clamp. 5,007,920, Cl. 606-207.000.
Torri, Giangiacomo: *See—*
Casu, Benito; Torri, Giangiacomo; Naggi, Annamaria; Mantovani, Marisa; Pescador, Rodolfo; Porta, Roberto; and Prino, Giuseppe, 5,008,253, Cl. 514-54.000.
Toshiba Machine Co., Ltd.: *See—*
Harada, Susumu, 5,008,052, Cl. 264-40.500.
Tosoh Corporation: *See—*
Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji; Shimizu, Sadami; Sato, Masakatsu; and Tamabayashi, Hanzo, 5,008,469, Cl. 568-722.000.
Total Spectrum Manufacturing Inc.: *See—*
Gordon, Gary B.; and Gonnelli, Robert R., 5,008,804, Cl. 364-167.010.
Toth, Imre: *See—*
Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponacz, Anna; Eifert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo ; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.
Toth, John F.: *See—*
Cavallaro, Nunzio M.; Toth, John F.; and Alexander, Cleo J., 5,008,681, Cl. 343-700.0MS.
Toto, Ltd.: *See—*
Yoshida, Takao; Ikeda, Toshio; Douke, Takhiro; and Eki, Toshio, 5,008,773, Cl. 361-187.000.
Totta, Paul A.: *See—*
Huang, Hung-Chang W.; and Totta, Paul A., 5,008,216, Cl. 437-192.000.
Huang, Hung-Chang W.; and Totta, Paul A., 5,008,730, Cl. 357-68.000.
Touton, Charles P.: *See—*
Matthews, Thomas E.; and Touton, Charles P., 5,007,221, Cl. 52-464.000.
Towers, Christine M.: *See—*
Bryan, Philip S.; Lambert, Patrick M.; Towers, Christine M.; and Jarrold, Gregory S., 5,008,034, Cl. 252-301.40F.
Toyama, Noboru: *See—*
Koizumi, Norihiko; Tanioka, Hiroshi; Toyama, Noboru; Arahara, Kozo; and Yuasa, Toshiya, 5,008,690, Cl. 346-140.00R.
Toyoda Gosei Co., Ltd.: *See—*
Minoura, Jun; Takahahi, Shigeyuki; Kato, Hisaki; Ito, Toshiyasu; Mori, Takaaki; Kato, Mamoru; Shimada, Junichi; and Okabayashi, Katsuaki, 5,007,718, Cl. 350-357.000.
Toyoda Koki Kabushiki Kaisha: *See—*
Yamamoto, Masaji; Tanooka, Shigeo; and Sakai, Toshifumi, 5,007,885, Cl. 475-231.000.
Toyoda, Noriyuki: *See—*
Ikuzawa, Masanori; Oguchi, Yoshiharu; Matsunaga, Kenichi; Toyoda, Noriyuki; Furusho, Takao; Fujii, Takayoshi; and Yoshikumi, Chikao, 5,008,243, Cl. 514-8.000.
Toyofuku, Kunitaka: *See—*
Takahashi, Yoshiyuki; Toyofuku, Kunitaka; and Iwasaki, Akiko, 5,008,236, Cl. 503-209.000.
Toyomaki, Kazuya, to Victor Company of Japan, Ltd. Digital to analog converter using pulse width modulator for independently setting edge position. 5,008,675, Cl. 341-152.000.
Toyota, Akinori: *See—*
Ishimaru, Naoshi; Tsutsui, Toshiyuki; Toyota, Akinori; and Kashiwa, Norio, 5,008,356, Cl. 526-281.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Asada, Toshiyuki, 5,007,887, Cl. 45-284.000.
Tracy, David J.: *See—*
Chaudhuri, Ratan K.; Tracy, David J.; and Login, Robert B., 5,008,104, Cl. 424-70.000.
Transaction Technology, Inc.: *See—*
Weiss, Lawrence D.; Caruthers, Douglas W.; Inatomi, Charles T.; Kawan, Joseph C.; Lee, Shan; Marks, Harvey; Meguerdijan, Sarkis A.; Parekh, Dilip J.; Samulon, Alfred S.; Takata, Melvin M.; Tucci, Morris L.; and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.
Traonmilin, Eric: *See—*
Legris, Bernard; Oppedal, Magne; and Traonmilin, Eric, 5,007,769, Cl. 405-195.000.
Trapp, Richard E.; Hansen, Gary L.; Clay, Robert B.; Dubetsky, Lawrence J.; and Olney, Robert S., to Atlas Powder Company. Multicomponent explosives. 5,007,973, Cl. 149-109.600.
Trauth, Hubert: *See—*
Aumueller, Alexander; Neumann, Peter; and Trauth, Hubert, 5,008,312, Cl. 524-92.000.
Spang, Peter; Neumann, Peter; Wagenblast, Gerhard; and Trauth, Hubert, 5,008,397, Cl. 548-331.000.
Treatch, James E.; and Mikesell, James R., to PulseTrend, Inc. Interface using 12-digit keypad for programming parameters in ambulatory blood pressure monitor. 5,007,429, Cl. 128-677.000.
Tredegar Molded Products Company: *See—*
Alieri, Rodiero; and Thomason, Paul L., 5,007,150, Cl. 29-33.00J.
Tree Top, Inc.: *See—*
Kobes, Gerald W.; and Eisele, Thomas A., 5,007,334, Cl. 99-483.000.
Trema, Daniel, to Elf France. Arm support device for a rotating element. 5,007,497, Cl. 180-219.000.
Tremco Incorporated: *See—*
Janoski, Ronald J., 5,008,311, Cl. 524-59.000.
Tremulis, William S.: *See—*
Doyle, A. Thomas; Tremulis, William S.; and McQueen, Colleen L., 5,007,434, Cl. 128-772.000.
Trenkle, Robert W.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Calderone, Nicholas; and Fenn, Ronald S., 5,008,437, Cl. 560-35.000.
Trevett, Neil F.; and Wilson, Malcolm E., to Du Pont Pixel Systems, Limited. Analog controlled mixer. 5,008,754, Cl. 358-183.000.
Tridan Tool & Machine, Inc.: *See—*
Voss, Harlan F., 5,007,275, Cl. 72-335.000.
Trigon, Roland; Drabowitch, Serge; and Roger, Joseph, to Thomson-CSF. Anti-jamming device for a radar provided with a reflector antenna. 5,008,677, Cl. 342-17.000.
Triplett, Kelly B.: *See—*
Greco, Carl C.; and Triplett, Kelly B., 5,008,420, Cl. 556-182.000.
TriQuint Semiconductor, Inc.: *See—*
Taylor, Stewart S., 5,008,565, Cl. 307-296.700.
Trolltsch, Karl: *See—*
Messinger, Werner; Trolltsch, Karl; and Tewes, Bernd, 5,007,168, Cl. 30-43.000.

Trost, Paul B., to Waste-Tech Services, Inc. Decontamination of earth formations. 5,008,019, Cl. 210-747.000.
Truchement, Bernard: *See—*
Favre, Eric; Masek, Petr; and Truchement, Bernard, 5,008,013, Cl. 210-482.000.
Trustee of Columbia University in the City of New York, The: *See—*
Nakanishi, Koji; Oltz, Eugene M.; and Grunberger, Dezider, 5,008,441, Cl. 560-75.000.
TRW Inc.: *See—*
Smolley, Robert, 5,007,841, Cl. 439-66.000.
Smolley, Robert, 5,007,843, Cl. 439-66.000.
TRW Vehicle Safety Systems Inc.: *See—*
Lenzen, Reiner, 5,007,661, Cl. 280-735.000.
Tsilibary, Effie C.; and Furcht, Leo T., to University of Minnesota, Regents of the. Prosthetic devices coated with polypeptides with type IV collagen activity. 5,007,925, Cl. 623-1.000.
Tsou, Len-Yan, to North American Philips Corporation. Reactive ion etching of silicon with hydrogen bromide. 5,007,982, Cl. 156-643.000.
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Yamazaki, Shunpei; Imatou, Shinji; Tsuchiya, Mitsunori; Itoh, Kenji; Inushima, Takashi; and Kawano, Atsushi, 5,007,374, Cl. 118-723.000.
Tsuchiya, Reijiro: *See—*
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Tsukada, Masaharu: *See—*
Shimizu, Katsuichi; Shibata, Takehiko; Yokomizo, Yoshikazu; Suzuki, Akira; Murakami, Koichi; Yoshida, Tadashi; Tsukada, Masaharu; Nagashima, Nao; and Miyagi, Ken, 5,008,760, Cl. 358-451.000.
Tsukada, Yukihiko: *See—*
Kobayashi, Hitoshi; Takano, Akira; Narusawa, Naoharu; Tsukada, Yukihiko; Sakamoto, Hiroshi; Hirano, Masaki; and Ando, Masao, 5,008,710, Cl. 355-202.000.
Tsukamoto, Jun; and Takahashi, Akio, to Director-General of Agency of Industrial Science and Technology. Process for preparation of polyacetylene film. 5,008,040, Cl. 252-500.000.
Tsukawaki, Tomohiro, to Fuji Xerox Co., Ltd. System for recognizing handwritten letters. 5,008,948, Cl. 382-13.000.
Tsukimura, Kiyoshi: *See—*
Niizato, Tomonori; Noguchi, Katsumi; and Tsukimura, Kiyoshi, 5,007,392, Cl. 123-193.00H.
Tsukisaka, Ryogo; Kondo, Satoshi; Kaneguchi, Toshio; and Deguchi, Takashi, to Shiraishi Central Laboratories Co., Ltd. Calcium carbonate, calcium carbonate pigment, process for preparing same, coating composition for information recording paper and information recording paper. 5,007,964, Cl. 106-464.000.
Tsuneda, Haruhiro: *See—*
Saito, Kazuharu; Matsukura, Hiroyasu; Komase, Hiroshi; Tsuneda, Haruhiro; Watanabe, Junji; Saito, Tadao; Doy, Toshiroh; and Matsunaga, Kazuo, 5,007,209, Cl. 51-283.00R.
Tsuruoka, Yoshiaki: *See—*
Kuramochi, Wataru; Tsuruoka, Yoshiaki; Saitou, Norikazu; Shibuya, Akira; and Yamashita, Shuichi, 5,008,552, Cl. 235-483.000.
Tsutsui, Toshiyuki: *See—*
Ishimaru, Naoshi; Tsutsui, Toshiyuki; Toyota, Akinori; and Kashiwa, Norio, 5,008,356, Cl. 526-281.000.
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Tsutsuta, Koji; and Seki, Kiwao, to Hitachi, Ltd. Conductivity detector. 5,008,627, Cl. 324-444.000.
Tsuzuki, Sadachika: *See—*
Noji, Akio; Kamimura, Kenji; and Tsuzuki, Sadachika, 5,008,557, Cl. 250-561.000.
Tucci, Morris L.: *See—*
Weiss, Lawrence D.; Caruthers, Douglas W.; Inatomi, Charles T.; Kawan, Joseph C.; Lee, Shan; Marks, Harvey; Meguerdijan, Sarkis A.; Parekh, Dilip J.; Samulon, Alfred S.; Takata, Melvin M.; Tucci, Morris L.; and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.
Tucker, Benjamin W.; and Bhattacharjee, Debkumar, to Dow Chemical Company, The. Rigid polyurethane foams with low thermal conductivities. 5,008,299, Cl. 521-159.000.
Tucker, Richard B. C.; Davis, Jackie L.; and Lewis, Fielding H., Jr., to Wm. T. Burnett & Co., Inc. Lacrosse stick. 5,007,652, Cl. 273-326.000.
Tuthill, Michael G., to Analog Devices, Incorporated. High-speed digital-to-analog converter with BiMOS cell structure. 5,008,671, Cl. 341-136.000.
Tyberg, William T.: *See—*
Suzuki, Arata; Tyberg, William T.; Banks, George; and Suzuki, Marcia, 5,007,427, Cl. 128-659.000.
Tzeng, Yonhua: *See—*
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Uchikawa, Sadao: *See—*
Aoyama, Motoo; Koyama, Junichi; Uchikawa, Sadao; Bessho, Yasunori; Ozawa, Michihiro; Nakamura, Mitsunari; Nakajima, Akinobu; and Maruyama, Hiromi, 5,008,070, Cl. 376-419.000.
Uchimi, Toshiharu: *See—*
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Uchiyama, Seiji: *See—*
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Uda, Koji: *See—*
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Uenishi, Akio, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device with stepped well. 5,008,720, Cl. 357-23.400.
Ueno, Shoji: *See—*
Yoshida, Shiro; Yamada, Yasuhiro; and Ueno, Shoji, 5,008,764, Cl. 360-77.150.
Ueyama, Naoto: *See—*
Tomiyama, Tsuyoshi; Tomiyama, Akira; Shirai, Tadashi; Wakabayashi, Shuuichi; Kawai, Tomoyuki; Ueyama, Naoto; and Sonegawa, Motoharu, 5,008,282, Cl. 514-393.000.
Uffelman, Bradley L.: *See—*
Marshall, James W.; Gotchy, David; Uffelman, Bradley L.; Leimbach, Wendell B.; and Wilhelmi, Albert A., 5,008,572, Cl. 310-45.000.
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Doan, Phong D.; Upton, James E.; Hess, Douglas N.; Bass, Wayne R.; and Ufford, Keith A., 5,007,435, Cl. 128-784.000.
Uggetti, Sergio: *See—*
Falconieri, Remo; and Uggetti, Sergio, 5,007,749, Cl. 400-208.000.
Ugolini, Antonio: *See—*
Rossey, Guy; Ugolini, Antonio; Chekroun, Isaac; Vartanian, Abkar; and Wick, Alexander, 5,008,434, Cl. 560-17.000.
Uhrig, Heinz; Ehl, Klaus; and Deubel, Reinhold, to Hoechst Aktiengesellschaft. Surface-active compounds on the basis of arylated fatty substances and their use. 5,008,442, Cl. 560-149.000.
Ullum, Henrik: *See—*
Fosbol, Peder; Ullum, Henrik; and Korremann, Birgitte, 5,008,375, Cl. 530-357.000.
Ulman, Abraham: *See—*
Robello, Douglas R.; Ulman, Abraham; Urankar, Edward J.; and Willand, Craig S., 5,008,043, Cl. 252-582.000.
Robello, Douglas R.; and Ulman, Abraham, 5,008,369, Cl. 528-391.000.
Ulmer, Edward A., Jr., to Square D Company. Method of eliminating the effects of birefringence from the detection of electric current using Faraday rotation. 5,008,611, Cl. 324-96.000.
Underwood, David T. Shower dechlorinator using granulated copper alloy filter material. 5,008,011, Cl. 210-232.000.
Unewisse, Heinz; and Foering, Herbert, to Mannesmann AG. Crimped sleeve to tube joint. 5,007,667, Cl. 285-382.200.
Ungermann, Charles B.: *See—*
Taylor, Dennis R.; and Ungermann, Charles B., 5,008,226, Cl. 502-81.000.
Taylor, Dennis R.; and Ungermann, Charles B., 5,008,227, Cl. 502-83.000.
Union Camp Corporation: *See—*
Bose, Ajit K., 5,007,233, Cl. 53-449.000.
Union Carbide Chemicals And Plastics Technology Corporation: *See—*
Richey, Forrest A., Jr.; and Hoy, Kenneth L., 5,008,336, Cl. 525-124.000.
Union Carbide Chemicals and Plastics Technology Corporation: *See—*
Kurtz, Stuart J.; and Szaniszlo, Steve R., 5,008,056, Cl. 264-130.000.
Leder, Jonathan, 5,008,022, Cl. 210-755.000.
Mallon, Charles B.; and Chu, Howard, 5,008,363, Cl. 528-49.000.
Wegman, Richard W.; and Bryant, David R., 5,008,235, Cl. 502-342.000.
Union Carbide Corporation: *See—*
Osborne, Timothy W., 5,007,962, Cl. 106-38.220.
Union Oil Company of California: *See—*
Block, Michael J.; Kelley, Arnold E.; and Skripek, Milan, 5,007,987, Cl. 201-17.000.
Stack, Dennis P., 5,008,326, Cl. 524-519.000.
Uniroyal Textilcord, S.A.: *See—*
Lenards, Gerhard F., 5,008,130, Cl. 427-206.000.
Unisearch Systems Limited: *See—*
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Unisys Corp.: *See—*
Boling, Norman L.; Mayer, Thomas; and Rancourt, James D., 5,008,129, Cl. 427-160.000.
Hamilton, T. A., 5,008,500, Cl. 200-61.700.
Parsley, David W.; and Martin, Hubert C., Jr., 5,008,795, Cl. 363-20.000.
United AgriSeeds, Inc.: *See—*
Ranch, Jerome P.; and Buchheim, Julie A., 5,008,200, Cl. 435-240.490.
United Kingdom Atomic Energy Authority: *See—*
Higgins, Ian; and Baxendale, Andrew, 5,008,159, Cl. 428-614.000.
Siva, Kumar V., 5,007,300, Cl. 74-471.0XY.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Kelly, Christopher J.; and Lewis, Keith L., 5,007,689, Cl. 350-1.600.
U.S. Intelco Networks, Inc.: *See—*
Olsen, Steven A.; Cronin, William J.; Jarvis, Ben L.; and McMillan, Jeff G., 5,008,929, Cl. 379-112.000.
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Agriculture: *See—*
Bartelt, Robert J.; and Dowd, Patrick F., 5,008,478, Cl. 585-16.000.
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Coddington, John D., 5,008,570, Cl. 307-475.000.

Evers, Robert C.; Dang, Thuy D.; and Moore, D. Roger, 5,008,346, Cl. 525-426.000.
Hilland, David H., 5,008,770, Cl. 361-56.000.
Hirleman, Edwin D., Jr., 5,007,737, Cl. 356-336.000.
Kolesar, Edward S., Jr., 5,008,213, Cl. 437-51.000.
Look, David C.; Sewell, James S.; Mier, Millard G.; Sizelove, John R.; Walters, Dennis C.; and Dudley, Scott C., 5,008,542, Cl. 250-341.000.
Morris, John B.; Lammers, Uve H. W.; and Marr, Richard A., 5,007,721, Cl. 350-486.000.
Schlie, LaVerne A.; and Rathge, Robert D., 5,008,593, Cl. 315-39.000.

America: *See*—
Cyr, Reginald, 5,008,859, Cl. 367-2.000.
Riley, Thomas P.; Buffman, Martin; and Cyr, Reginald J., 5,008,860, Cl. 367-6.000.

Army: *See*—
Branovich, Louis E.; Eckart, Donald W.; Smith, Bernard; and Freeman, Gerard, 5,007,874, Cl. 445-50.000.
Gooch, William A., Jr.; Burkins, Matthew S.; Mills, Leo F.; Ogilvy, James W.; and Ricchiazzi, Antonio J., 5,007,326, Cl. 89-36.020.

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Jach, Terrence J.; Geist, Jon C.; Carver, Gary P.; and Novotny, Donald B., 5,008,908, Cl. 378-70.000.

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Dickie, William; Cavallaro, Joseph A.; and Killmeyer, Richard P., 5,008,083, Cl. 422-101.000.
Kirby, John A., 5,008,539, Cl. 250-336.100.
Overton, William C., Jr.; van Hulsteyn, David B.; and Flynn, Edward R., 5,008,622, Cl. 324-248.000.
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Smith, James L.; and Kucera, Eugenia H., 5,008,163, Cl. 429-40.000.
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Health and Human Services: *See*—
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Rice, Kenner C., 5,008,449, Cl. 562-478.000.
Swedo, Susan E.; Rapoport, Judith L.; and Leonard, Henrietta L., 5,008,262, Cl. 514-217.000.

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Lerner, Narcinda R.; and Wydeven, Theodore J., Jr., 5,007,983, Cl. 156-643.000.

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Albares, Donald J., 5,007,700, Cl. 350-96.170.
Archibald, Frank S., 5,008,863, Cl. 367-165.000.
Dixon, David S.; and Schade, Nicholas, 5,007,847, Cl. 439-100.000.
Jordan, John J., 5,007,155, Cl. 29-434.000.
Kirkland, James L., 5,007,346, Cl. 102-402.000.
Reimel, Paul F., 5,008,630, Cl. 328-165.000.
Willey, Jefferson M.; Alter, James J.; and Letellier, Jules P., 5,008,680, Cl. 342-372.000.

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Hall, Robert E.; Spolek, Graig A.; Wasser, John H.; and Butts, Nelson L., 5,007,404, Cl. 126-77.000.

U.S. Philips Corporation: *See*—
Appels, Johannes A.; and Maas, Henricus G. R., 5,008,209, Cl. 437-31.000.
Behling, Rolf; and Koster, Wolfgang, 5,008,917, Cl. 378-140.000.
Bernardet, Henri; and Pauwels, Jean-Claude, 5,008,585, Cl. 313-231.310.
Borgis, Livio, 5,008,587, Cl. 313-318.000.
Burgess, Ian A.; Dennis, Andrew M.; and Marshall, Christopher B., 5,008,849, Cl. 364-746.000.
Carleton, Samuel A., 5,008,583, Cl. 313-25.000.
Eizenhofer, Alfons; and Von Harten, Georg, 5,008,883, Cl. 370-95.100.
Fernando, Gerard M. X.; and Giardina, Aldo, 5,008,744, Cl. 358-105.000.
Harding, Geoffrey, 5,008,911, Cl. 378-86.000.
Hennings, Detlev; Hoffmann, Bernd F. W.; and Nutto, Markus, 5,008,646, Cl. 338-20.000.
Hovens, Paulus J. M., 5,008,659, Cl. 340-812.000.
Huisman, Frederikus R. J.; Oversluizen, Gerrit; and Martens, Jan W. D., 5,008,590, Cl. 313-500.000.
Molteni, Roberto; and Zanmarchi, Giulio, 5,008,547, Cl. 250-368.000.
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Peyerl, Gerhard, 5,008,778, Cl. 361-415.000.
Pragt, Henrikus J. H., 5,008,592, Cl. 313-623.000.
Ruter, Hans-Werner, 5,007,539, Cl. 206-524.000.
Van De Grift, Robert E. J.; Van Der Veen, Martien; and Linssen, Andre J., 5,008,731, Cl. 357-71.000.
Van Der Star, Max, 5,008,618, Cl. 324-158.00R.
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Verhulst, Antonius G. H., 5,007,715, Cl. 350-334.000.
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U.S. Robotics, Inc.: *See*—
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United Technologies Corporation: *See*—
Bullis, Robert H.; and Swindal, James L., 5,008,774, Cl. 361-283.000.
Morey, William W.; Leonberger, Fred J.; Glenn, William H.; and Meltz, Gerald, 5,007,705, Cl. 350-96.290.

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Arndt, Horst; and Kroetsch, Edward S., 5,008,943, Cl. 381-68.600.

University of Aberdeen, The University Court of the: *See*—
Watmough, David J., 5,007,428, Cl. 128-660.040.

University of Alberta, Governors of the: *See*—
Bassi, Pawan K.; Eastwell, Kenneth C.; Goudey, James S.; and Spencer, Mary E., 5,008,091, Cl. 423-245.100.

University of British Columbia, The: *See*—
Ross, Douglas A., 5,008,511, Cl. 219-121.480.

University of California, The Regents of the: *See*—
Gruber, Harry E., 5,008,251, Cl. 514-43.000.
Mazziotta, John C.; Daghighian, Farhad; and Hoffman, Edward J., 5,008,546, Cl. 250-366.000.
Norman, Amos; and Iwamoto, Keisuke S., 5,008,907, Cl. 378-65.000.

University of Florida: *See*—
Bodor, Nicholas S., 5,008,257, Cl. 514-192.000.
Gray, Dennis J.; and Elmstrom, Gary W., 5,007,198, Cl. 47-58.000.

University of Kentucky Research Foundation: *See*—
Digenis, George A.; and Agha, Bushra J., 5,008,245, Cl. 514-18.000.

University of Miami: *See*—
Sengupta, Subrata, 5,007,478, Cl. 165-10.000.

University of Minnesota, Regents of the: *See*—
Tsilibary, Effie C.; and Furcht, Leo T., 5,007,925, Cl. 623-1.000.

University of North Carolina at Chapel Hill, The: *See*—
Cheng, Yung-chi; and Bobek, Miroslav, 5,008,252, Cl. 514-50.000.

University of Pennsylvania, The Trustees of the: *See*—
Derbyshire, Garrett, 5,007,926, Cl. 623-1.000.

University of Washington, The Board of Regents of the: *See*—
Grayston, J. Thomas; Kuo, Cho-chou; and Wang, San-pin, 5,008,186, Cl. 435-7.360.

Unkuri, Matti; and Nurmi, Tom, to Oy Partek AB. Method for feeding the primary web of a mineral wool web by means of a pendulum conveyor onto a receiving conveyor and an arrangement of such a pendulum conveyor. 5,007,623, Cl. 270-39.000.

Uno, Ken; Fujino, Takuo; and Nakamori, Hideki, to Hoya Corporation; and Prometron Technics Corporation. Process for producing mold used for obtaining press molded glass article. 5,008,002, Cl. 204-192.310.

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Unsworth, Peter J.; Merrison, John C.; and Rowan, Timothy M., to Allen-Bradley Company, Inc. Controller for starting and stopping electric motors. 5,008,608, Cl. 318-729.000.

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Allenza, Paul; Clifft, Christy G.; and Morrell, Marie J., 5,008,195, Cl. 435-193.000.
Gruia, Adrian J., 5,007,998, Cl. 208-59.000.
Lambert, Susan L., 5,008,233, Cl. 502-231.000.
Maier, William H.; and Bentham, Martin F., 5,008,004, Cl. 208-321.000.
Oroskar, Anil R.; and Johnson, James L., 5,008,189, Cl. 435-105.000.
Vora, Bipin V.; and Scott, Norman H., 5,008,467, Cl. 568-697.000.

Uppstu, Erik, to Oy Tampella AB. Combustion air supply system for a recovery furnace. 5,007,354, Cl. 110-238.000.

Upton, James E.: *See*—
Doan, Phong D.; Upton, James E.; Hess, Douglas N.; Bass, Wayne R.; and Ufford, Keith A., 5,007,435, Cl. 128-784.000.

Urakami, Fukashi. Device capable of suction-adhering to a wall surface and moving therealong. 5,007,210, Cl. 51-429.000.

Urankar, Edward J.: *See*—
Robello, Douglas R.; Ulman, Abraham; Urankar, Edward J.; and Willand, Craig S., 5,008,043, Cl. 252-582.000.

Urbach, Hansjorg; Henning, Rainer; Teetz, Volker; Geiger, Rolf; Becker, Reinhard; and Gaul, Holger, to Hoechst Aktiengesellschaft. Bicyclic aminoacids as intermediates. 5,008,400, Cl. 548-452.000.

Usami, Ryuji, to Casio Computer Co., Ltd. Polyphonic electronic musical instrument. 5,007,323, Cl. 84-607.000.

USI Lighting, Inc.: *See*—
Counts, Richard C., 5,008,599, Cl. 315-247.000.

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Usui, Masayoshi; and Kanesaka, Hiroshi, 5,007,742, Cl. 374-136.000.
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Utlaut, Mark W.: *See*—
Stevens, Eugene H.; and Utlaut, Mark W., 5,008,602, Cl. 318-561.000.

Utsunomiya, Masayuki; Fujita, Shigeo; Nozawa, Toshiyuki; and Kamiyama, Morihiro, to Asahi Chemical Co., Ltd. Cyanine compounds. 5,008,401, Cl. 548-455.000.

Uuskallio, Arvo F., to Briggs & Stratton Corporation. Staple gun support assembly. 5,007,573, Cl. 227-139.000.

Uzawa, Shunichi: *See—*
Kawakami, Eigo; Ozawa, Kunitaka; Uda, Koji; Shimoda, Isamu; and Uzawa, Shunichi, 5,008,703, Cl. 355-53.000.

Uzelmeier, Christopher W.: *See—*
Powell, Joseph B.; and Uzelmeier, Christopher W., 5,008,470, Cl. 568-727.000.

Valdenaire, Bruno: *See—*
Penitot, Gerard; Cartigny, Marcel; Roynard, Joel; Valdenaire, Bruno; Astier, Marc; Mery, Bernard; and Wendling, Michael, 5,007,447, Cl. 137-102.000.

Valen, Maurice. Dental implant. 5,007,835, Cl. 433-174.000.

Valeo Electronique: *See—*
Heritier-Best, Pierre, 5,008,643, Cl. 336-96.000.

Valeo Systems d'Essuyage: *See—*
Chevalier, Jean-Claude; and Raymond, Guy, 5,007,131, Cl. 15-250.190.

Vallender, Leonard J.: *See—*
Hannon, Charles; and Vallender, Leonard J., 5,007,554, Cl. 220-269.000.

Valmet Paper Machinery, Inc.: *See—*
Gustavsson, Tord G.; Lyxell, Frans O. S.; and Silja, Karl T. I., 5,007,986, Cl. 162-281.000.

van Bergen, Theodorus F.: *See—*
van der Velden, Johnny; van Bergen, Theodorus F.; Simons, August L. H.; Colditz, Johannes K. E.; Ligtenberg, Martinus A. C.; and Dreesen, Franciscus M., 5,008,591, Cl. 313-524.000.

Van De Grift, Robert E. J.; Van Der Veen, Martien; and Linssen, Andre J., to U.S. Philips Corp. Integrated semiconductor circuit with decoupled D.C. wiring. 5,008,731, Cl. 357-71.000.

van der Have, Leonard A., to Kopin Corporation. MOS thin film transistor. 5,008,723, Cl. 357-23.700.

Vanderhider, J. Alan: *See—*
Meyer, Louis W.; Vanderhider, J. Alan; and Carswell, Robert, 5,008,033, Cl. 252-182.130.

Vanderpool, James L.: *See—*
O'Dea, Kevin J.; Bergman, Norman J.; Digiulio, Peter C.; Dolan, Donald T.; and Vanderpool, James L., 5,007,371, Cl. 118-680.000.

van der Schoot, Jelle, to Staalkat B. V. Method and apparatus for unloading stacks of trays. 5,007,785, Cl. 414-331.000.

Van Der Star, Max, to U.S. Philips Corporation. Scan test apparatus for asynchronous circuitry. 5,008,618, Cl. 324-158.00R.

Van Der Veen, Martien: *See—*
Van De Grift, Robert E. J.; Van Der Veen, Martien; and Linssen, Andre J., 5,008,731, Cl. 357-71.000.

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van der Werff, Adriaan, to Hadewe B.V. Method of, and a device for, controlling the rotation of an element about an axis of means of a wrap spring. 5,007,507, Cl. 188-77.00W.

Van Druff, Albert, Jr., to Cornerstone Products Inc. In store keep-a-cooler. 5,007,249, Cl. 62-255.000.

Van Egeraat, Walterus A. L. A., to U.S. Philips Corporation. X-ray analysis apparatus comprising a saggitally curved analysis crystal. 5,008,910, Cl. 378-84.000.

Vanek, Denis W.; and Holland, G. Neil, to Picker International, Inc. Patient and coil support structure for magnetic resonance imagers. 5,007,425, Cl. 128-653.00A.

van Engelenburg, Hendrik: *See—*
Dolfsma, Hendrik; and van Engelenburg, Hendrik, 5,008,623, Cl. 324-262.000.

Van Gorkom, Gerardus G. P., to U.S. Philips Corporation. Energy analyzer and spectrometer for low-energy electrons. 5,008,535, Cl. 250-305.000.

Van Gossum, Lucien J.: *See—*
Van Thillo, Etienne A.; and Van Gossum, Lucien J., 5,008,178, Cl. 430-527.000.

van Hulsteyn, David B.: *See—*
Overton, William C., Jr.; van Hulsteyn, David B.; and Flynn, Edward R., 5,008,622, Cl. 324-248.000.

Vanlerberghe, Guy; Zysman, Alexandre; and Sebag, Henri, to L'Oreal. Hemiacetal compounds and the applications thereof. 5,008,406, Cl. 549-378.000.

Van Nostrand, Lance, to Eastman Kodak Company. Digital image interpolator with multiple interpolation algorithms. 5,008,752, Cl. 358-160.000.

Van Thillo, Etienne A.; and Van Gossum, Lucien J., to Agfa-Gevaert, N.V. Sheet or web carrying an antistatic layer. 5,008,178, Cl. 430-527.000.

VanWert, Bernard: *See—*
Dennis, William E.; and VanWert, Bernard, 5,008,301, Cl. 522-13.000.

Vaqua Limited: *See—*
Keane, Brian, 5,007,798, Cl. 415-88.000.

Vargas, Anthony: *See—*
Zecchino, Julius R.; Krishnaswamy, Natrajan; Clement, Pamela A.; and Vargas, Anthony, 5,008,100, Cl. 424-59.000.

Varo, Inc.: *See—*
Hanson, Charles M; and MacDonald, Virginia N., 5,008,657, Cl. 340-766.000.

Vartanian, Abkar: *See—*
Rossey, Guy; Ugolini, Antonio; Chekroun, Isaac; Vartanian, Abkar; and Wick, Alexander, 5,008,434, Cl. 560-17.000.

Vasta, Joseph A., deceased; and by Vasta, Rita, executrix. Hydrophobic polymer products. 5,008,322, Cl. 524-398.000.

Vasta, Rita, executrix: *See—*
Vasta, Joseph A., deceased; and Vasta, Rita, executrix, 5,008,322, Cl. 524-398.000.

Vectorpharma International S.p.A.: *See—*
Lovrecich, Mara L., 5,008,114, Cl. 424-484.000.

Veitscher Magnesitwerke-Actien-Gesellschaft: *See—*
Handler, Rudolf, 5,007,366, Cl. 116-208.000.

Ventritex, Inc.: *See—*
Pless, Benjamin; Sweeney, Michael; Winkle, Roger; and Nathan, Anthony, 5,007,422, Cl. 28-419.0PG.

Veraart, Pierre: *See—*
Whitten, Brian T.; Veraart, Pierre; Kwasniewski, Andrew; and Vollenwyder, Kurt, 5,007,496, Cl. 180-131.000.

Verhulst, Antonius G. H., to U.S. Philips Corporation. Display and pick-up device for stereoscopic picture display. 5,007,715, Cl. 350-334.000.

Vessa, James R. FIFO clock. 5,008,870, Cl. 368-242.000.

Vestar, Inc.: *See—*
Tin, George W., 5,008,109, Cl. 424-422.000.

Vianova Kunstharz, A.G.: *See—*
Paar, Willibald, 5,008,351, Cl. 525-528.000.

Vibra Screw, Incoporated: *See—*
Wahl, Richard C.; and Winters, Ralph J., 5,007,561, Cl. 222-55.000.

Victor Company of Japan, Ltd.: *See—*
Kondo, Tetsuya; and Kawai, Noboru, 5,008,176, Cl. 430-272.000.
Toyomaki, Kazuya, 5,008,675, Cl. 341-152.000.
Yoshida, Shiro; Yamada, Yasuhiro; and Ueno, Shoji, 5,008,764, Cl. 360-77.150.

Vincent, Andre; and Munting, Evrard, to S. A. Manufacture Belge de Gembloux. Joint member for a hip prosthesis. 5,007,935, Cl. 623-22.000.

Viscodrive GmbH: *See—*
Wiese, Helmut; and Schonenbrecher, Paul-Erich, 5,007,498, Cl. 280-248.000.

Visconti, Peter: *See—*
Neuwirth, Helmuth; Meyerhoefer, Carl; Carney, William V.; and Visconti, Peter, 5,008,772, Cl. 361-119.000.

Viswanathan, Ravi: *See—*
DePrince, Randolph B.; and Viswanathan, Ravi, 5,008,112, Cl. 424-468.000.

Vital, Joao P. C. C.: *See—*
Da Franca, Jose D. A. E.; Vital, Joao P. C. C.; and Leme, Carlos M. D. A. D. A., 5,008,674, Cl. 341-150.000.

Vital Kogyo Kabushiki Kaisha: *See—*
Nishimura, Yosaku; and Smith, Glenn S., 5,007,617, Cl. 254-372.000.

Vlasbloem, Hugo, to B.V. Optische Industrie "De Oude Delft". Methods for forming a radiograph using slit radiography. 5,008,915, Cl. 378-108.000.

Volkswagen A.G.: *See—*
Muller, Eckart, 5,007,237, Cl. 60-285.000.

Vollenwyder, Kurt: *See—*
Whitten, Brian T.; Veraart, Pierre; Kwasniewski, Andrew; and Vollenwyder, Kurt, 5,007,496, Cl. 180-131.000.

Vollmer, Jim R.: *See—*
Weiss, Lawrence D.; Caruthers, Douglas W.; Inatomi, Charles T.; Kawan, Joseph C.; Lee, Shan; Marks, Harvey; Meguerdijan, Sarkis A.; Parekh, Dilip J.; Samulon, Alfred S.; Takata, Melvin M.; Tucci, Morris L.; and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.

von Erichsen, Volker, to Stober & Morlock Warmekraft Gesellschaft mbH. Closing arrangement for ducts having large cross-sectional areas, particularly flue gas ducts. 5,007,456, Cl. 137-601.000.

Von Harten, Georg: *See—*
Eizenhofer, Alfons; and Von Harten, Georg, 5,008,883, Cl. 370-95.100.

von Hein, Eduard, to Maschinenfabrik Wifag. Device for producing an additional fold in folding devices of rotary printing presses. 5,007,891, Cl. 493-444.000.

Voorde, Paul V.: *See—*
Chiang, Shang-yi; Huang, Wen-Ling M.; Drowley, Clifford I.; and Voorde, Paul V., 5,008,210, Cl. 437-33.000.

Vora, Bipin V.; and Scott, Norman H., to UOP. Process for direct etherification of a dehydrogenated effluent. 5,008,467, Cl. 568-697.000.

Voss, Harlan F., to Tridan Tool & Machine, Inc. Progressive die for drawless fin. 5,007,275, Cl. 72-335.000.

W. R. Grace & Co.-Conn.: *See—*
Sherwin, Martin B.; and Su, Jow-Lih, 5,008,428, Cl. 558-346.000.

Wachter, Allan: *See—*
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Wacker-Chemie GmbH: *See—*
Meier, Josef; Deinhammer, Wolfgang; and Krageloh, Konrad, 5,008,392, Cl. 546-250.000.
Schuster, Johann; Piehler, Martin; Muller, Horst; and Schneider, Otto, 5,008,229, Cl. 502-167.000.
Wolfer, Dietrich; and Marsch, Wilhelm, 5,008,317, Cl. 524-262.000.

Wada, Kenneth R.: *See—*
Blau, David A.; Meadows, John; Sherlock, Thomas M.; Stengel, Fred; Studholme, Robert M.; Wada, Kenneth R.; and Kepner, Christopher J., 5,008,081, Cl. 422-64.000.

Wada, Takuya: *See—*
Ohki, Hiroshi; Kobayashi, Shoei; and Wada, Takuya, 5,008,521, Cl. 235-454.000.

Wadhwa, Lachhman; and Steurer, Andrew M., to Hoechst Celanese Corporation. Internal lubricant for glass reinforced polyarylene sulfide. 5,008,316, Cl. 524-230.000.
Wagenblast, Gerhard: *See*—
Spang, Peter; Neumann, Peter; Wagenblast, Gerhard; and Trauth, Hubert, 5,008,397, Cl. 548-331.000.
Wagener, Hans. Holders with busbars for a busbar system. 5,008,483, Cl. 174-68.200.
Wagener, Hans. Assembly kit for a busbar system. 5,008,484, Cl. 174-68.200.
Wagener, Hans. Holder with busbars for a busbar system. 5,008,493, Cl. 174-68.200.
Wagener, Hans. Busbar system with holders and busbar sections. 5,008,494, Cl. 174-68.200.
Wagenseil, Ludwig, to Hydromatik GmbH. Piston for piston machines. 5,007,332, Cl. 92-181.00R.
Wagner, Richard S.: *See*—
Case, Christopher J.; Cheung, Kin P.; Liu, Ruichen; Schutz, Ronald J.; and Wagner, Richard S., 5,008,217, Cl. 437-195.000.
Wahl, Richard C.; and Winters, Ralph J., to Vibra Screw, Incoporated. Non-flooding set rate feeder. 5,007,561, Cl. 222-55.000.
Wahlco, Inc.: *See*—
Krigmont, Henry V.; and Coe, Everett L., Jr., 5,008,628, Cl. 324-693.000.
Wairasevens, Rene ; Franklin, James; and Yernaux, Jean-Marie, to Solvay & Cie. Process for the manufacture of 1-chloro-1,1-difluoroethane. 5,008,474, Cl. 570-168.000.
Wakabayashi, Shigeru; Shimokawa, Masao; and Takahashi, Masaki, to Shikoku Kakoki Co., Ltd. Apparatus for feeding container blanks to container bottom forming mandrel. 5,007,889, Cl. 493-316.000.
Wakabayashi, Shuuichi: *See*—
Tomiyama, Tsuyoshi; Tomiyama, Akira; Shirai, Tadashi; Wakabayashi, Shuuichi; Kawai, Tomoyuki; Ueyama, Naoto; and Sonegawa, Motoharu, 5,008,282, Cl. 514-393.000.
Wakaki, Hideaki: *See*—
Okumoto, Takaharu; Nishimoto, Tatsuo; and Wakaki, Hideaki, 5,007,643, Cl. 273-167.00R.
Wakasugi, Takashi: *See*—
Ishizuka, Makoto; and Wakasugi, Takashi, 5,008,462, Cl. 568-466.000.
Wakatsuki, Yoshio; Okuyama, Toshiharu; Takeuchi, Hajime; Shimizu, Misao; and Shimizu, Giichiro, to Man Design Co. Ltd. Measuring device having transmitter. 5,008,665, Cl. 340-870.260.
Wakeling, Robert, to Ford Motor Company. Throttle valve for an internal combustion engine. 5,007,395, Cl. 123-337.000.
Walker, Stanley L. Bevel splined articulated joint. 5,007,880, Cl. 464-159.000.
Wall, Joseph W.: *See*—
Sansone, Ronald P.; Schumacher, Karl H.; Keating, Raymond; Wall, Joseph W.; and Joshi, Uday W., 5,008,827, Cl. 364-464.020.
Wallach, Clifford H.; Suffern, Robert C.; and Walsh, Dale M., to U.S. Robotics, Inc. Asymmetrical duplex error-controlled modem. 5,008,901, Cl. 375-8.000.
Waller, George W. Anchoring structure for underground pipes. 5,007,768, Cl. 405-154.000.
Wallis, Bernard J. Web handling apparatus for metal ribbon stock. 5,007,270, Cl. 72-187.000.
Wallis, Bernard J. Press with die cushion gas monitor. 5,007,817, Cl. 425-136.000.
Walsh, Dale M.: *See*—
Wallach, Clifford H.; Suffern, Robert C.; and Walsh, Dale M., 5,008,901, Cl. 375-8.000.
Walters, Dennis C.: *See*—
Look, David C.; Sewell, James S.; Mier, Millard G.; Sizelove, John R.; Walters, Dennis C.; and Dudley, Scott C., 5,008,542, Cl. 250-341.000.
Walters, William T.; and Thompson, Carroll R., to Scan Systems, Inc. Ultrasonic inspection apparatus with centering means for tubular members. 5,007,291, Cl. 73-640.000.
Waltz, Douglas G.: *See*—
Edmond, John A.; Waltz, Douglas G.; Mitchell, Muni M.; Sedigh, Mohammad; and Hamerski, Roman, 5,008,735, Cl. 357-74.000.
Wandrey, Christian: *See*—
Neidermeyer, Uwe; Kragl, Udo; Kula, Maria R.; Wandrey, Christian; Makrylaleas, Kyriakos; and Drauz, Karlheinz, 5,008,192, Cl. 435-128.000.
Wang, Dou-Mei; Sturdivant, Linda D.; Biemer, Thomas A.; and Mink, Ronald, to Warner-Lambert Company. Hybridoma cell line and monoclonal antibodies to *Treponema denticola* ATCC 33520. 5,008,199, Cl. 435-240.270.
Wang, Howard. Lighting equipment for a key ring. 5,008,784, Cl. 362-116.000.
Wang, Leao. Structure of climbing exerciser with a counter-weight freewheel mechanism. 5,007,631, Cl. 272-70.000.
Wang, Patrick S., to Johnson Electric S.A. Assembled commutator with heat-resisting ring. 5,008,577, Cl. 310-233.000.
Wang, San-pin: *See*—
Grayston, J. Thomas; Kuo, Cho-chou; and Wang, San-pin, 5,008,186, Cl. 435-7.360.
Wanless, Ronald H.: *See*—
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Ward, Richard M.: *See*—
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Warner-Lambert Company: *See*—
Motta, Vincent C., 5,007,169, Cl. 30-45.000.
Wang, Dou-Mei; Sturdivant, Linda D.; Biemer, Thomas A.; and Mink, Ronald, 5,008,199, Cl. 435-240.270.
Warner, William B., to Farnam Companies, Inc. Attractant composition for synanthropic flies. 5,008,107, Cl. 424-84.000.
Washizu, Katsushi; and Ohtaka, Mitsumasa, to Usui Kokusai Sangyo Kaisha Limited. Method and apparatus for manufacturing bellows pipe. 5,007,267, Cl. 72-59.000.
Washizu, Takehiro; and Nagamatsu, Tsutomu, to Yamaha Hatsudoki Kabushiki Kaisha. Intake system for automotive engine. 5,007,386, Cl. 123-52.0MC.
Wasser, John H.: *See*—
Hall, Robert E.; Spolek, Graig A.; Wasser, John H.; and Butts, Nelson L., 5,007,404, Cl. 126-77.000.
Waste-Tech Services, Inc.: *See*—
Trost, Paul B., 5,008,019, Cl. 210-747.000.
Watanabe, Eiji; Horio, Nasakazu; and Suzuki, Kenzi, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Adsorbent for phosphorus and method for production of adsorbent for phosphorus. 5,008,224, Cl. 502-63.000.
Watanabe, Fumihiko: *See*—
Narisada, Masayuki; Ohtani, Mitsuaki; Watanabe, Fumihiko; and Kawata, Kyozo, 5,008,409, Cl. 549-463.000.
Watanabe, Junji; and Ishikawa, Yuji, to Kabushiki Kaisha Toshiba. Method of forming original image and additional image, and apparatus for performing same. 5,008,704, Cl. 355-202.000.
Watanabe, Junji: *See*—
Saito, Kazuharu; Matsukura, Hiroyasu; Komase, Hiroshi; Tsuneda, Haruhiro; Watanabe, Junji; Saito, Tadao; Doy, Toshiroh; and Matsunaga, Kazuo, 5,007,209, Cl. 51-283.00R.
Watanabe, Yasuo: *See*—
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Kurosawa, Soichi; Iijima, Katsumi; Iizuka, Nobuyuki; Maeno, Yosimi; Takahashi, Shintaro; Watanabe, Yasuo; and Hiraga, Ryo, 5,008,072, Cl. 420-69.000.
Watanabe, Yoshihisa: *See*—
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Watari, Shigeru: *See*—
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Watkins, James D., to Golden Valley Microwave Foods Inc. Microwave corn popping package. 5,008,024, Cl. 219-10.55E.
Watmough, David J., to University of Aberdeen, The University Court of the. Apparatus for examining a body of living tissues. 5,007,428, Cl. 128-660.040.
Watson, Dean R.; and Gallagher, Thomas E., IV, to T. G. & Watson, Inc. Game ball. 5,007,639, Cl. 273-60.00R.
Watson, Mark E.: *See*—
Schlesinger, Robert A.; Hill, Kimuel L.; Ali, Hamid S.; and Watson, Mark E., 5,008,655, Cl. 340-691.000.
Watson, Thomas A. Novelty magnetic top. 5,007,877, Cl. 446-242.000.
Waverley Pharmaceuticals Limited: *See*—
Rose, Howard; and McAffer, Ian G. C., 5,007,546, Cl. 215-32.000.
Webb, Thomas E.: *See*—
Minton, John P.; Webb, Thomas E.; and Abou-Issa, Hussein M., 5,008,291, Cl. 514-578.000.
Webber, John C.: *See*—
Effland, John E.; Gipson, John M.; Shaffer, David B.; and Webber, John C., 5,008,679, Cl. 342-353.000.
Weber, Daniel K. Method and apparatus for removing oxygen from a semiconductor processing reactor. 5,007,992, Cl. 204-59.00R.
Weber, Ralph A.: *See*—
Lackner, John R.; Grzywna, Stanley E.; Weber, Ralph A.; and Baird, Thomas E., 5,007,133, Cl. 15-351.000.
Weder, Donald E.; Straeter, William F.; Straeter, Joseph G.; Craig, Franklin J.; Donnelly, Wilma M.; and Redditt, Jack W., to Highland Supply Corporation. Method of wrapping utilizing a self adhering wrapping material. 5,007,229, Cl. 53-397.000.
Weeber, Adrianus A. R., to U.S. Philips Corporation. Method and device for placing components on a support. 5,007,162, Cl. 29-839.000.
Weeks, Herman D., Jr.; and Cella, Robert, to Facile Holdings, Inc. Electrical cables and serpentine pattern shielding tape therefor. 5,008,489, Cl. 174-36.000.
Weete, John D.; and Griffith, George L., to Emulsion Technology, Inc. Emulsifier for water-in-oil emulsions. 5,008,037, Cl. 252-314.000.
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Wei, Yun S. Crankshafts without torsional vibration resonance. 5,007,306, Cl. 74-595.000.
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Weisse, Joachim: *See—*
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Fraser, Howard H., Jr.; and Weldon, Mark P., 5,007,808, Cl. 417-368.000.

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Wellner, Daniel, to Cornell Research Foundation, Inc. Deblocking amino terminal N-acetyl serine and N-acetyl threonine residues in peptides and proteins to allow sequencing. 5,008,372, Cl. 530-345.000.

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Kazar, Dennis M., 5,008,595, Cl. 315-178.000.

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Schuetz, Franz; Brand, Siegbert; Wenderoth, Bernd; Sauter, Hubert; Ammermann, Eberhard; and Lorenz, Cisela, 5,008,438, Cl. 560-55.000.

Wendling, Michael: *See—*
Penitot, Gerard; Cartigny, Marcel; Roynard, Joel; Valdenaire, Bruno; Astier, Marc; Mery, Bernard; and Wendling, Michael, 5,007,447, Cl. 137-102.000.

Wennberg, Stig: *See—*
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Goade, James C.; and Werner, Claude H., 5,007,805, Cl. 417-216.000.

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Schwab, Wilhelm; and Muller, Gerhard, 5,007,820, Cl. 425-333.000.

Wernicke & Co. GmbH: *See—*
Gottschald, Lutz, 5,007,977, Cl. 156-353.000.

Wessale, Jerry L.: *See—*
Badylak, Stephen F.; Geddes, Leslie A.; and Wessale, Jerry L., 5,007,927, Cl. 623-3.000.

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Archer, David H.; and Ahmed, Mohammed M., 5,007,988, Cl. 204-153.180.
Mrenna, Stephen A., 5,008,645, Cl. 337-70.000.

Westlake, David J.: *See—*
Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., 5,008,465, Cl. 568-697.000.

Westphalen, Karl-Otto: *See—*
Ditrich, Klaus; Hamprecht, Gerhard; Wuerzer, Bruno; Meyer, Norbert; Westphalen, Karl-Otto; and Laatsch, Hartmut, 5,007,954, Cl. 71-90.000.

Westvaco Corporation: *See—*
Dimitri, Mitchell S., 5,008,378, Cl. 530-501.000.
Schilling, Peter; and Schreuders, Hans G., 5,008,382, Cl. 536-11.000.
Woodward, Fred E.; and Hudson, Alice P., 5,008,039, Cl. 252-392.000.

Wetzka, Gerhard: *See—*
Schulte, Burkart; Sterner, Hakan; Wetzka, Gerhard; and Hardt, Norbert, 5,007,213, Cl. 52-29.000.

Wey, Remo C. Ballpoint pen with condom. 5,007,756, Cl. 401-195.000.

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Fischer, Rolf; Frank, Juergen; Merger, Franz; and Weyer, Hans-Juergen, 5,008,408, Cl. 549-429.000.

Weyerhaeuser Company: *See—*
Hunter, Frank R., 5,008,359, Cl. 527-103.000.

Wheeler, Robert L. Head gear having protective lens. 5,007,109, Cl. 2-10.000.

Whirlpool Corporation: *See—*
Holling, Ronald W., 5,008,516, Cl. 219-519.000.
Kruck, Richard W.; Cur, Omer N.; Leclear, Douglas D.; Kuehl, Steven J.; and Burin, Ralph R., 5,007,246, Cl. 62-131.000.

White, Richard E.: *See—*
Freeburg, Thomas A.; and White, Richard E., 5,008,938, Cl. 380-50.000.

Whitekettle, Wilson K.: *See—*
Conlan, John T.; and Whitekettle, Wilson K., 5,008,023, Cl. 210-764.000.

Whitten, Brian T.; Veraart, Pierre; Kwasniewski, Andrew; and Vollenwyder, Kurt, to Inco Limited. Automated underground haulage truck. 5,007,496, Cl. 180-131.000.

Wick, Alexander: *See—*
Rossey, Guy; Ugolini, Antonio; Chekroun, Isaac; Vartanian, Abkar; and Wick, Alexander, 5,008,434, Cl. 560-17.000.

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Lauks, Imants R.; Wieck, Henry J.; and Bandru, Gregory M., 5,008,616, Cl. 324-158.00F.

Wiedeck, Hans; and Chiesura, Michel. Vehicle-mounted load hoisting device. 5,007,792, Cl. 414-500.000.

Wiedemann, Ingrid: *See—*
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; Hoefke, Wolfgang; Arndts, Dietrich; and Streller, Ilse, 5,008,273, Cl. 514-301.000.

Wiedrich, Donald E.: *See—*
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Wiener, Robert J.: *See—*
Langensiepen, Ralph A.; Aghajanian, Michael K.; and Wiener, Robert J., 5,007,474, Cl. 164-97.000.

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Wiesgickl, Gunther: *See—*
Beck, Horst-Philipp; Emig, Gerhard; Wiesgickl, Gunther; Burg, Karlheinz; and Muck, Karl-Friedrich, 5,008,463, Cl. 568-487.000.

Wilder, Paul R.; and Kesterman, James E., to Dover Corporation. Fluid dispensing nozzle construction having a diaphragm subassembly therein and methods of making the same. 5,007,468, Cl. 141-209.000.

Wiley, George A.: *See—*
Critchlow, David N.; Yehushua, Moshe; Avis, Graham M.; Heimbigner, Wade L.; Johnson, Karle J.; and Wiley, George A., 5,008,900, Cl. 375-8.000.

Wilharm, Peter; Buhr, Gerhard; and Fuchs, Juergen, to Hoechst Aktiengesellschaft. Binders soluble in aqueous alkali and containing silanyl groups in the side chain, process for preparing same and also photosensitive mixture containing these compounds. 5,008,362, Cl. 528-28.000.

Wilhelmi, Albert A.: *See—*
Marshall, James W.; Gotchy, David; Uffelman, Bradley L.; Leimbach, Wendell B.; and Wilhelmi, Albert A., 5,008,572, Cl. 310-45.000.

Wilk, Shalom, to Israel Aircraft Industries Ltd. Optical system employing a transmitting solid corner cube. 5,008,527, Cl. 250-216.000.

Wilkinson, William T. Combination sit-up, rowing, arm, leg and foot exercise device. 5,007,632, Cl. 272-72.000.

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Robello, Douglas R.; Ulman, Abraham; Urankar, Edward J.; and Willand, Craig S., 5,008,043, Cl. 252-582.000.

Willcock, William T.: *See—*
Gawrys, George W.; Oberman, Richard A.; and Willcock, William T., 5,008,930, Cl. 379-210.000.

Willey, Jefferson M.; Alter, James J.; and Letellier, Jules P., to United States of America, Navy. Programmable beam transform and beam steering control system for a phased array radar antenna. 5,008,680, Cl. 342-372.000.

Wm. T. Burnett & Co., Inc.: *See—*
Tucker, Richard B. C.; Davis, Jackie L.; and Lewis, Fielding H., Jr., 5,007,652, Cl. 273-326.000.

Williams, Dennis A.; Horton, Roger L.; Newlove, John C.; and Chumley, Robert E., to Exxon Chemical Patents, Inc. Method of treating subterranean formations using a non-damaging fracturing fluid. 5,007,481, Cl. 166-300.000.

Williams, Robert M. Heat reclamation apparatus. 5,007,825, Cl. 432-99.000.

Willoughby, Jon S., to Burle Technologies, Inc. Clock synchronized digital TV motion detector. 5,008,745, Cl. 358-105.000.

Wills, Kendall S.; and Rodriguez, Paul A., to Texas Instruments Incorporated. Laser programming of semiconductor devices using diode make-link structure. 5,008,729, Cl. 357-51.000.

Wilms, Karl-Heinz. Apparatus for measuring the refraction characteristics of ophthamological lenses. 5,007,734, Cl. 356-124.000.

Wilson, Bruce B.; and Grunzinger, Raymond E., to Minnesota Mining and Manufacturing Company. Embedded lens retroreflective sheeting with flexible, dimensionally stable coating. 5,008,142, Cl. 428-203.000.

Wilson, Keith E. High-accuracy wavelength stabilization of angled-stripe super luminescent laser diode sources. 5,008,889, Cl. 372-32.000.

Wilson, Malcolm E.: *See—*
Trevett, Neil F.; and Wilson, Malcolm E., 5,008,754, Cl. 358-183.000.

Wilson, Mildred N., to Nabisco Brands, Inc. Dry mix for preparation of in-situ sauce for foodstuffs. 5,008,124, Cl. 426-589.000.

Wilson, Thomas M.: *See*—
Barnett, Charles J.; and Wilson, Thomas M., 5,008,391, Cl. 546-243.000.
Wind, Jan: *See*—
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Windsor Communications, Inc.: *See*—
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Winicov, Herbert B.: *See*—
Bender, Paul E.; Lantos, Ivan; McGuire, Michael A.; Pridgen, Lendon N.; and Winicov, Herbert B., 5,008,390, Cl. 546-199.000.
Winkel, Jens: *See*—
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Winkelmann, Manfred: *See*—
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Winkle, Roger: *See*—
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Winkler, Hans-Henning; and Rutschle, Eugen, to Chiron-Werke GmbH & Co. KG. Machine tool. 5,007,157, Cl. 29-568.000.
Winkler, Winfried: *See*—
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Winters, Ralph J.: *See*—
Wahl, Richard C.; and Winters, Ralph J., 5,007,561, Cl. 222-55.000.
Wirth, Peter: *See*—
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Wirz, Armin: *See*—
Busenhart, Peter; Schneeberger, Ruedi; Holbein, Erwin; Wirz, Armin; Flueli, Adolf; and Maier, Hansueli, 5,007,595, Cl. 242-46.400.
Wischermann, Gerhard, to BTS Broadcast Television Systems GmbH. Apparatus system for deriving synchronizing imformation from a digtial video signal. 5,008,751, Cl. 358-148.000.
Wise, Ronald D. Removable and adjustable fittable vehicle bed liner assembly. 5,007,670, Cl. 296-39.100.
Wiseman, Timothy R., Sr.: *See*—
Lewis, Milton A., Jr.; Mason, Jeffrey S.; Swinford, Carson B.; and Wiseman, Timothy R., Sr., 5,007,112, Cl. 2-79.000.
Wisniewski, Karen L.: *See*—
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Witek, Rich: *See*—
Bhandarkar, Dileep P.; Cutler, Dave; Cardoza, Wayne; Witek, Rich; and Orbits, Dave, 5,008,812, Cl. 364-200.000.
Withers, Robert W.; and Johnson, Robert H., to Motorola, Inc. Method of recognizing selected objects. 5,008,836, Cl. 364-516.000.
Witt, Hans-Hinrich, to B. Braun Melsungen AG. Catheter set for plexus anesthesia. 5,007,902, Cl. 604-117.000.
Wnuk, Andrew J.: *See*—
Benecke, Arnold G.; Kinne, Daniel J.; and Wnuk, Andrew J., 5,008,110, Cl. 424-448.000.
Wohler, Ernst: *See*—
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Harris, Paul J.; and Wojcik, Ronald T., 5,008,334, Cl. 525-109.000.
Wolf, Fred R., to Zeon Chemical USA, Inc. No-post-cure method of curing polyacrylate polymers. 5,008,345, Cl. 525-340.000.
Wolfe, Robert E.; and Goyette, Ronald A., to Raytheon Company. Additive fluid viewing. 5,007,254, Cl. 68-17.00R.
Wolfer, Dietrich; and Marsch, Wilhelm, to Wacker-Chemie GmbH. Compositions which can be crosslinked to form flame retardant and/or tracking resistant and arc resistant organopolysiloxane elastomers. 5,008,317, Cl. 524-262.000.
Woloszyk, Leonard T., to Electro-Consultants, Inc. Water leak detection apparatus for use in suspended ceilings. 5,008,652, Cl. 340-605.000.
Wolpers, Jurgen: *See*—
Hellermann, Walter; Herrmann, Christoph; Fuchs, Hans-Bernd; Nordsiek, Karl-Heinz; and Wolpers, Jurgen, 5,008,343, Cl. 525-316.000.
Won, Chan H.: *See*—
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Wong, Stephen S.: *See*—
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Wood, Robert S.; and Thomas, Mark A., to Flight Dynamics, Inc. Compact arrangement for head-up display components. 5,007,711, Cl. 350-174.000.
Woods, John H.: *See*—
Baker, Timothy J.; and Woods, John H., 5,008,144, Cl. 428-211.000.
Woodward, Fred E.; and Hudson, Alice P., to Westvaco Corporation. Low foaming rust inhibiting composition. 5,008,039, Cl. 252-392.000.
Woolson, Steven T., to Cemax, Inc. Surgical method for hip joint replacement. 5,007,936, Cl. 623-23.000.
Work, Dale E.: *See*—
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World Auto Plate Ltd.: *See*—
Mastuoka, Masaaki, 5,008,783, Cl. 362-83.200.
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Alverth, Ronald W.; Schumacher, Thomas H.; and Przybylowski, Thaddeus M., 5,007,890, Cl. 493-434.000.
Wright, Duane E. Electrical receptacle with power indicator light. 5,007,857, Cl. 439-490.000.
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Wrisley, David B., Jr.: *See*—
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Wuerzer, Bruno: *See*—
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Wulff, Dietrich; Jager, Hans-Ludwig; and Weissé, Joachim, to Daimler-Benz. Seal arrangement for connecting seals. 5,007,761, Cl. 403-287.000.
Wunning, Joachim. Roller hearth furnace for the heat treating of metal and ceramic parts. 5,007,826, Cl. 432-121.000.
Wutzler, Peter; Mucke, Horst; and Santasalo, Lauri, to Oy Santasalo-Sohlberg AB. Apparatus and method for sterilizing or disinfecting objects. 5,008,079, Cl. 422-28.000.
Wydeven, Theodore J., Jr.: *See*—
Lerner, Narcinda R.; and Wydeven, Theodore J., Jr., 5,007,983, Cl. 156-643.000.
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Wyvratt, Matthew J.: *See*—
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Ewing, Joan R.; and Wiedrich, Donald E., 5,008,707, Cl. 355-220.000.
Kremers, Henry T.; and Rabb, Khalid M., 5,007,625, Cl. 270-53.000.
Yu, Robert C. U., 5,008,167, Cl. 430-56.000.
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Xuan, Jialuo. Module-type multi-function electrical power adapter for automobiles and the like. 5,007,863, Cl. 439-639.000.
Yabuki, Hiroyuki: *See*—
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Yaginuma, Nakatsugu; and Arai, Takaki, to Fuji Photo Film Co., Ltd. Integral multi-layer analysis element. 5,008,078, Cl. 422-56.000.
Yajima Kogyo, Inc.: *See*—
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Yamada, Hideaki; Tani, Yoshiki; Shimizu, Sakayu; and Shiozaki, Shozo, to Nippon Zeon Co., Ltd. Process for producing S-adenosyl-L-homocysteine. 5,008,188, Cl. 435-88.000.
Yamada, Kojiro: *See*—
Ishida, Tetsuyoshi; Kawano, Shigeyoshi; Kohtaka, Ikuo; Yamada, Kojiro; Kaku, Hiroyuki; and Narita, Tsuneo, 5,007,240, Cl. 60-673.000.
Yamada, Naoki, to Kabushiki Kaisha Toshiba. Method and apparatus for correcting extension rates of images. 5,008,947, Cl. 382-6.000.
Yamada, Osamu: *See*—
Tokizane, Toshiaki; Ito, Yoshiharu; Yamada, Osamu; Masuda, Toshiyuki; and Kuroda, Mitsunobu, 5,008,662, Cl. 340-825.060.
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Yamadera, Hideya: *See*—
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Yamaguchi, Sumiko, to Yamaguchi, Sumiko; and Shirakawa, Tomohiro. Infant's chair for shampooing. 5,007,119, Cl. 4-523.000.
Yamaguchi, Toru; Inazuki, Yukio; and Nakazawa, Hideo, to IHI Master Metal Ltd.; and Ishikawajima-Harima Heavy Industries Co., Ltd. Vessel for making high-purity fine particles of active metals. 5,007,243, Cl. 62-51.100.
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Yamaha Corporation: *See*—
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Yamaha Hatsudoki Kabushiki Kaisha: *See*—
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Yamakawa, Kiyoshi, to Brother Kogyo Kabushiki Kaisha. Printer having carriage zeroing device. 5,007,751, Cl. 400-322.000.
Yamakawa, Nobuaki: *See*—
Ishida, Masahiko; Yamakawa, Nobuaki; and Shiida, Masahiro, 5,007,160, Cl. 29-753.000.
Yamamoto, Haruo: *See*—
Maeda, Junichi; Yanai, Tsuguo; Yamamoto, Kazuto; Kuriyama, Yuji; and Yamamoto, Haruo, 5,008,854, Cl. 364-900.000.
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Maeda, Junichi; Yanai, Tsuguo; Yamamoto, Kazuto; Kuriyama, Yuji; and Yamamoto, Haruo, 5,008,854, Cl. 364-900.000.
Yamamoto, Masaji; Tanooka, Shigeo; and Sakai, Toshifumi, to Toyoda Koki Kabushiki Kaisha. Driving torque transmitting device. 5,007,885, Cl. 475-231.000.
Yamamoto, Masao, to K. K. Musshu. Portable urinal. 5,007,116, Cl. 4-144.200.
Yamamoto, Masashi: *See*—
Enoguchi, Yuji; Natsuhara, Toshiya; and Yamamoto, Masashi, 5,008,708, Cl. 355-259.000.
Yamamoto, Michio, to Futaba Denshi Kogyo Kabushiki Kaisha. Receiver for spectrum spread communication. 5,008,899, Cl. 375-1.000.
Yamamoto, Osamu; and Yoshida, Toshihiko, to Sharp Kabushiki Kaisha. Light wavelength converter. 5,007,694, Cl. 350-96.140.
Yamamoto, Ryoichi; and Suzuki, Hiroshi, to Mitsui Petrochemical Industries, Ltd. Process for exchanging dispersing medium of terephthalic acid slurry. 5,008,450, Cl. 562-485.000.
Yamamoto, Takaaki: *See*—
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Yamamoto, Yasuyoshi; Kaga, Yuzo; Yoshikawa, Toshiharu; and Moribe, Akira, to Menicon Co., Ltd. Ultraviolet-hardenable adhesive and bonding method employing same. 5,007,975, Cl. 156-154.000.
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LIST OF REISSUE PATENTEES

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Sirois, Lester H.: *See*—
Ailey, Harrison A., Jr.; Sirois, Lester H.; and Boody, Lawrence D., 316,220, Cl. D8-66.000.
Skerker, Robert; and Prindle, William, to Robinson Knife Manufacturing Co., Inc. Spatula. 316,213, 4-16-91, Cl. D7-696.000.
Skwirz, Marylee A. Pet collar or similar article. 316,314, 4-16-91, Cl. D30-152.000.
Smith, Benny E. Fishing lure. 316,289, 4-16-91, Cl. D22-127.000.
Snow, James A. Animated horse figure for use with child's tricycle. 316,237, 4-16-91, Cl. D12-117.000.
Sogabe, Takashi, to Sony Corporation. Tape player. 316,263, 4-16-91, Cl. D14-165.000.
Somers, Robert I.: *See*—
Gierke, Martin P.; and Somers, Robert I., 316,216, Cl. D8-61.000.
Sony Corporation: *See*—
Kikutani, Fumitaka, 316,262, Cl. D14-141.000.
Sogabe, Takashi, 316,263, Cl. D14-165.000.
Sotralents S.A.: *See*—
Roser, Georges, 316,320, Cl. D34-42.000.
Space Age Design Furniture: *See*—
Mark, David S., 316,195, Cl. D6-461.000.
Spalding & Evenflo Companies, Inc.: *See*—
Giambrone, Harry J., 316,238, Cl. D12-133.000.
Sport Fun, Inc.: *See*—
White, James D., 316,280, Cl. D21-67.000.
Spraying Systems Co.: *See*—
Miller, Frederick A.; and Valiga, Richard A., 316,267, Cl. D18-7.000.
SSMC Inc.: *See*—
Dob, Allan M., 316,248, Cl. D13-162.000.
Stafford, John R.: *See*—
Murry, Edsel E.; and Stafford, John R., 316,192, Cl. D6-366.000.
Wilson, Robert L.; and Stafford, John R., 316,191, Cl. D6-366.000.
Stahel, Alwin J.: *See*—
Preisler, James M.; and Stahel, Alwin J., 316,235, Cl. D12-114.000.
Stanley Works, The: *See*—
Belanger, Richard A., 316,215, Cl. D8-30.000.
Stewart, Bill: *See*—
Gray, Jan; Watts, Tony; and Stewart, Bill, 316,224, Cl. D9-403.000.
Stewart, James R.: *See*—
Esslinger, Hartmut H.; Gruenberg, Eric I.; and Stewart, James R., 316,252, Cl. D14-106.000.
Strimpfel, Kelly J. Backpack. 316,177, 4-16-91, Cl. D3-32.000.
Stromberg, John, to Ledu Corporation. Lamp reflector. 316,310, 4-16-91, Cl. D26-131.000.
Stroup, H. B., Jr.: *See*—
Connor, John K.; Connor, Charles M., Jr.; and Stroup, H. B., Jr., 316,188, Cl. D6-300.000.
Sumitomo Wiring Systems, Ltd.: *See*—
Moriai, Yasuharu; and Ito, Osamu, 316,246, Cl. D13-133.000.
Suzuki, Kaoru, to Plus Corporation. Writing instrument holder. 316,274, 4-16-91, Cl. D19-85.000.
Sylvan R. Shemitz Associates, Inc.: *See*—
Shemitz, Sylvan R., 316,306, Cl. D26-85.000.
TDK Corporation: *See*—
Uemura, Noboru, 316,178, Cl. D3-35.000.
Thomson Consumer Electronics, Inc.: *See*—
Renk, Thomas E., Jr., 316,260, Cl. D14-126.000.
Tremonti, Michael J., to Hardware Designs Inc. Door hardware. 316,217, 4-16-91, Cl. D8-319.000.
Tremonti, Michael J., to Hardware Designs Inc. Door hardware. 316,218, 4-16-91, Cl. D8-319.000.
Tsuda, Toru; and Masuda, Hidenori, to Bridgestone Corporation. Automobile tire. 316,239, 4-16-91, Cl. D12-145.000.
Tsuda, Toru; and Ichiki, Yasufumi, to Bridgestone Corporation. Automobile tire. 316,240, 4-16-91, Cl. D12-146.000.
Tsuji, Shintaro, to Sanrio Company, Ltd. Combined desk set and holder therefor. 316,273, 4-16-91, Cl. D19-75.000.
Uemura, Noboru, to TDK Corporation. Case for magnetic tape cassettes. 316,178, 4-16-91, Cl. D3-35.000.
Ultradent Products Inc.: *See*—
Fischer, Dan E., 316,176, Cl. D2-641.000.
Uncommon Conglomerates, Inc.: *See*—
Mason, William H., III, 316,270, Cl. D19-35.000.
U.S. Philips Corporation: *See*—
Langlois, Michael G., 316,261, Cl. D14-138.000.
Valiga, Richard A.: *See*—
Miller, Frederick A.; and Valiga, Richard A., 316,267, Cl. D18-7.000.
van der Heijden, Johannes, to S. C. Johnson & Son, Inc. Bottle. 316,222, 4-16-91, Cl. D9-317.000.
Warner-Lambert Company: *See*—
Edstrom, Richard C.; Hirst, Richard N.; Gerstman, Richard B.; and Pressler, David O., 316,225, Cl. D9-404.000.
Watkins, Elton. Display device or similar article. 316,189, 4-16-91, Cl. D6-301.000.
Watts, Tony: *See*—
Gray, Jan; Watts, Tony; and Stewart, Bill, 316,224, Cl. D9-403.000.
Weiner, Bruce A., to 493207 Ontario Ltd. Gum ball machine. 316,276, 4-16-91, Cl. D20-3.000.
White, James D., to Sport Fun, Inc. Pogo stick. 316,280, 4-16-91, Cl. D21-67.000.
Wilson, Robert L.; and Stafford, John R., to Chromcraft Furniture Corp. Chair. 316,191, 4-16-91, Cl. D6-366.000.
Winston, Emanuel A. Construction toy. 316,282, 4-16-91, Cl. D21-108.000.
Witchger, Eugene S. Golf club carrier. 316,182, 4-16-91, Cl. D3-37.000.
Woodring, Cooper C.: *See*—
Gaber, Ira; and Woodring, Cooper C., 316,207, Cl. D7-384.000.
Woods, Charles H., Jr. Computerized checkbook register. 316,269, 4-16-91, Cl. D19-26.000.
Yamashita, Taichirou: *See*—
Yokoyama, Masaru; Saegusa, Masahiro; Kawano, Yuuji; Yamashita, Taichirou; and Endo, Hiroshi, 316,255, Cl. D14-118.000.
Yokoyama, Masaru; Saegusa, Masahiro; Kawano, Yuuji; Yamashita, Taichirou; and Endo, Hiroshi, to Hitachi, Ltd. Facsimile transceiver. 316,255, 4-16-91, Cl. D14-118.000.
Yonehara, Fuyuki, to Fuji Photo Film Co., Ltd. Audio cassette. 316,256, 4-16-91, Cl. D14-121.000.
Yonehara, Fuyuki, to Fuji Photo Film Co., Ltd. Audio cassette. 316,257, 4-16-91, Cl. D14-121.000.
Yonehara, Fuyuki, to Fuji Photo Film Co., Ltd. Audio cassette. 316,258, 4-16-91, Cl. D14-121.000.
Yonehara, Fuyuki, to Fuji Photo Film Co., Ltd. Audio cassette. 316,259, 4-16-91, Cl. D14-121.000.
Yuen, John S., to John Manufacturing Limited. Battery operated vacuum cleaner. 316,316, 4-16-91, Cl. D32-18.000.
Zaruba, John V.; Broadbent, Peter A.; and Morrison, Howard J., to Marvin Glass & Associates. Combined toy baby care cart and tools therefor. 316,283, 4-16-91, Cl. D21-121.000.
Zinka Inc.: *See*—
Rodgers, Michael C., 316,187, Cl. D3-106.000.
493207 Ontario Ltd.: *See*—
Weiner, Bruce A., 316,276, Cl. D20-3.000.

LIST OF PLANT PATENTEES

Bennett, Cecilia D., deceased (by O'Brien, Susan, executrix), to O'Brien, Susan, special administrator. Miniature rose plant named 'Luis Desamero'. 7,496, 4-16-91, Cl. 8.000.

Bonds, Irwin H., to Cruz, Ruben A. Almond tree, Cruz. 7,497, 4-16-91, Cl. 30.000.

Brown, B. Frank, to Hartman Plant Laboratories, Inc. Aglaonema plant named Superba. 7,501, 4-16-91, Cl. 88.000.

Cruz, Ruben A.: *See*—
Bonds, Irwin H., 7,497, Cl. 30.000.

Florfis AG: *See*—
Schumann, Ingeborg, 7,499, Cl. 68.000.

Hartman Plant Laboratories, Inc.: *See*—
Brown, B. Frank, 7,501, Cl. 88.000.

Imazio, Bruno L. Heather plant named Erica 'Augustina'. 7,498, 4-16-91, Cl. 54.000.

O'Brien, Susan, executrix: *See*—
Bennett, Cecilia D., deceased, 7,496, Cl. 8.000.

O'Brien, Susan, special administrator: *See*—
Bennett, Cecilia D., deceased, 7,496, Cl. 8.000.

Schumann, Ingeborg, to Florfis AG. Geranium plant named Fispol. 7,499, 4-16-91, Cl. 68.000.

VandenBerg, Cornelis P., to Yoder Brothers, Inc. Chrysanthemum plant named Desiree. 7,500, 4-16-91, Cl. 74.000.

Yoder Brothers, Inc.: *See*—
VandenBerg, Cornelis P., 7,500, Cl. 74.000.

CLASSIFICATION OF PATENTS

ISSUED APRIL 16, 1991

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2	5,007,108
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	5,007,110
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79	5,007,112
115	5,007,113
206	5,007,114
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515	5,007,118
523	5,007,119
558	5,007,120
566	5,007,121

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448	5,007,123
481	5,007,124
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250 R	5,007,130
250.19	5,007,131
256.53	5,007,132
351	5,007,133

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129 R	5,007,140
163 R	5,007,141
400	5,007,142
	5,007,143
415	5,007,144
433	5,007,145
683	5,007,146

CLASS 27

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CLASS 28

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CLASS 29

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33 J	5,007,150
	5,007,151
116.2	5,007,152
407	5,007,153
430	5,007,154
434	5,007,155
568	5,007,157
596	5,007,156
603	5,007,158
622	5,007,159
753	5,007,160
769	5,007,161
839	5,007,162
840	5,007,163
854	5,007,164
888.011	5,007,166
888.1	5,007,165
889.1	5,007,167

CLASS 30

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45	5,007,169
232	5,007,170
294	5,007,171
377	5,007,172
391	5,007,173

CLASS 33

1 SD	5,007,174
286	5,007,175
377	5,007,176
706	5,007,177
767	5,007,178

CLASS 34

22	5,007,179
32	5,007,180
57 R	5,007,181
90	5,007,182
92	5,007,183

CLASS 35

586	5,007,222

CLASS 36

77 R	5,007,184
121	5,007,186
135	5,007,185

CLASS 37

220	5,007,187

CLASS 40

152	5,007,188
	5,007,189
564	5,007,190
638	5,007,191
661	5,007,192

CLASS 43

42.28	5,007,193
42.29	5,007,194
42.43	5,007,195
112	5,007,196
124	5,007,197

CLASS 45

284	5,007,887

CLASS 47

58	5,007,198
73	5,007,135

CLASS 49

13	5,007,199
141	5,007,200
348	5,007,201
441	5,007,202
493	5,007,203

CLASS 51

165.77	5,007,204
170 EB	5,007,205
170 R	5,007,206
204	5,007,207
281 R	5,007,208
283 R	5,007,209
295	5,007,943
429	5,007,210

CLASS 52

2.12	5,007,211
2.18	5,007,212
29	5,007,213
66	5,007,214
90	5,007,215
94	5,007,216
172	5,007,217
204	5,007,218
	5,007,219
311	5,007,220
464	5,007,221
741	5,007,223
	5,007,224
799	5,007,225
809	5,007,226

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243	5,007,227
282	5,007,228
397	5,007,229
	5,007,230
412	5,007,231
426	5,007,232
449	5,007,233

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16	5,007,944
	5,007,945
501	5,007,946

CLASS 56

10.2	5,007,234
12.4	5,007,235

CLASS 60

256	5,007,236
285	5,007,237
309	5,007,238
562	5,007,239
673	5,007,240
698	5,007,241

CLASS 62

3.2	5,007,242
51.1	5,007,243
53.1	5,007,244
117	5,007,245
131	5,007,246
174	5,007,247
244	5,007,248
255	5,007,249
372	5,007,250
476	5,007,251

CLASS 63

3	5,007,252

CLASS 65

3.43	5,007,947
30.13	5,007,948
160	5,007,949
182.5	5,007,950

CLASS 66

149 R	5,007,253

CLASS 68

17 R	5,007,254
210	5,007,255

CLASS 70

14	5,007,256
16	5,007,257
159	5,007,258
209	5,007,259
233	5,007,260
240	5,007,261
312	5,007,262
416	5,007,263

CLASS 71

72	5,007,951
73	5,007,952
77	5,007,953
90	5,007,954
103	5,007,955

CLASS 72

10	5,007,264
37	5,007,265
44	5,007,266
52	B1 4,732,026
59	5,007,267
76	5,007,268
173	5,007,269
187	5,007,270
196	5,007,271
226	5,007,272
242.2	5,007,273
254	5,007,274
335	5,007,275
351	5,007,276
379.2	5,007,277
383	5,007,278
394	5,007,279
402	5,007,280
406	5,007,281
481	5,007,282

CLASS 73

1 G	5,007,283
120	5,007,284
170 A	5,007,285
181	5,007,286
290 B	5,007,287
295	5,007,288
510	5,007,289
517 R	5,007,290
640	5,007,291
654	5,007,292
861.04	5,007,293
862.41	5,007,294
862.69	5,007,295
864.87	5,007,296
865.5	5,007,297

CLASS 74

200	5,007,298
335	5,007,299
471 XY	5,007,300
557	5,007,301
568 R	5,007,302
573 F	5,007,303
	5,007,304
573 R	5,007,305
595	5,007,306
606 R	5,007,307
866	5,007,147
	5,007,308
869	5,007,309

CLASS 75

238	5,007,956
252	5,007,957
330	5,007,958
645	5,007,959
743	5,007,960

CLASS 81

3.45	5,007,310
61	5,007,311
426.5	5,007,312
486	5,007,313

CLASS 82

120	5,007,314

CLASS 83

72	5,007,315
167	5,007,316
256	5,007,317
425.2	5,007,318
488	5,007,319
745	5,007,320

CLASS 84

325	5,007,321
453	5,007,322
607	5,007,323
741	5,007,324

CLASS 89

1.13	5,007,325
36.02	5,007,326

CLASS 91

422	5,007,327

CLASS 92

63	5,007,328
98 D	5,007,329
120	5,007,330
165 R	5,007,331
181 R	5,007,332

CLASS 99

286	5,007,333
483	5,007,334
487	5,007,335
	5,007,336

CLASS 100

188 R	5,007,337

CLASS 101

142	5,007,338
177	5,007,339
227	5,007,340
349	5,007,341
420	5,007,342

CLASS 102

31.2	5,007,344
290	5,007,343
313	5,007,345
402	5,007,346
473	5,007,347
501	5,007,348

CLASS 104

12	5,007,349
	5,007,350

CLASS 105

101	5,007,351

CLASS 106

18	5,007,961
38.22	5,007,962
433	5,007,963
450	5,008,223
464	5,007,964
800	5,007,965

CLASS 108

56.1	5,007,352

CLASS 110

212	5,007,353
238	5,007,354

CLASS 112

54	5,007,355
68	5,007,356
103	5,007,357
235	5,007,358
265.2	5,007,359

CLASS 114

90	5,007,360
98	5,007,361
123	5,007,362
219	5,007,363
331	5,007,364

CLASS 116

34 R	5,007,365
208	5,007,366
210	5,007,367
211	5,007,368

CLASS 118

56	5,007,369
246	5,007,370
680	5,007,371
715	5,007,372
723	5,007,373
	5,007,374

CLASS 119

3	5,007,376
4	5,007,377
14.47	5,007,378
17	5,007,379
53	5,007,380
170	5,007,375

CLASS 123

1 A	5,007,381
21	5,007,382
41.49	5,007,383
48 A	5,007,384
48 B	5,007,385
52 MC	5,007,386
90.022	5,007,387
90.55	5,007,388
169 MG	5,007,389
180 T	5,007,390
182	5,007,391
193 H	5,007,392
195 R	5,007,393
279	5,007,394
337	5,007,395
339	5,007,396
422	5,007,397
479	5,007,398
489	5,007,399
506	5,007,400
509	5,007,401
549	5,007,402

CLASS 126

25 R	5,007,403
77	5,007,404
414	5,007,405

CLASS 127

34	5,007,966
46.1	5,007,967

CLASS 128

4	5,007,406
6	5,007,407
	5,007,408
17	5,007,409
33	5,007,410
64	5,007,411
78	5,007,412
	5,007,413
	5,007,414
80 C	5,007,415
80 H	5,007,416
	5,007,417
90	5,007,418
200.14	5,007,420
200.23	5,007,419
204.180	5,007,421
633	5,007,423
635	5,007,424
653 A	5,007,425
653 OAF	5,007,426
659	5,007,427
660.04	5,007,428
677	5,007,429
696	5,007,430
	5,007,431
736	5,007,432
742	5,007,433
772	5,007,434
784	5,007,435
786	5,007,436
798	5,007,438

CLASS 131

331	5,007,439
369	5,007,440

CLASS 132

73.6	5,007,441
218	5,007,442
270	5,007,443

CLASS 134

25.4	5,007,968
38	5,007,969
42	5,007,970
102	5,007,444
122 R	5,007,445

CLASS 135

16	5,007,811

CLASS 136

258	5,007,971

CLASS 137

72	5,007,446
102	5,007,447
223	5,007,448
	5,007,449
315	5,007,450
362	5,007,451
441	5,007,452
458	5,007,453
508	5,007,454
596.16	5,007,455
601	5,007,456
624.14	5,007,457
625.5	5,007,458
625.65	5,007,459

CLASS 138

89	5,007,460
97	5,007,461
154	5,007,462

CLASS 139

448	5,007,463
455	5,007,464

CLASS 140

150	5,007,465

CLASS 141

1	5,007,466
1.1	5,007,467
209	5,007,468

CLASS 144

252 R	5,007,469

CLASS 148

102	5,007,972

CLASS 149

109.6	5,007,973

CLASS 150

114	5,007,470

CLASS 152

540	5,007,471
546	5,007,472

CLASS 156

117	5,007,974
154	5,007,975
222	5,007,976
353	5,007,977
394.1	5,007,978
605	5,007,979
620.7	5,007,980

643 5,007,981
5,007,982
5,007,983
656 5,007,984

CLASS 160

135 5,007,473

CLASS 162

26 5,007,985
281 5,007,986

CLASS 164

97 5,007,474
5,007,475
5,007,476
169 5,007,477

CLASS 165

10 5,007,478

CLASS 166

178 5,007,479
292 5,007,480
300 5,007,481
345 5,007,482

CLASS 168

48.1 5,007,483

CLASS 172

1 5,007,484
500 5,007,485

CLASS 174

35 GC 5,008,485
35 MS 5,008,486
35 R 5,008,487
36 5,008,488
5,008,489
5,008,490
48 5,008,491
52.4 5,008,492
68.2 5,008,483
5,008,484
5,008,493
5,008,494
121 R 5,008,495
254 5,008,496

CLASS 175

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57 5,007,487
59 5,007,488
65 5,007,489
107 5,007,490
5,007,491
170 5,007,492
329 5,007,493

CLASS 178

18 5,008,497

CLASS 180

79.1 5,007,494
117 5,007,495
131 5,007,496
219 5,007,497

CLASS 181

258 5,007,499

CLASS 182

38 5,007,500
128 5,007,501
155 5,007,502
202 5,007,503

CLASS 184

8 5,007,504

CLASS 187

89 5,007,505
101 5,007,506

CLASS 188

77 W 5,007,507
251 A 5,007,508
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CLASS 190

122 5,007,510

CLASS 192

0.072 5,007,516
3.51 5,007,512
8 R 5,007,511
21.5 5,007,513
45 5,007,514
58 A 5,007,515
106.1 5,007,517

CLASS 194

212 5,007,518
230 5,007,519
317 5,007,520

CLASS 198

347.4 5,007,521
468.8 5,007,522

497 5,007,523
499 5,007,524
690.2 5,007,525
787 5,007,526
803.01 5,007,527
823 5,007,528

CLASS 200

11 R 5,008,498
50 C 5,008,499
61.45 R 5,008,501
61.7 5,008,500
248 5,008,502
308 5,008,503
401 5,008,504
531 5,008,505

CLASS 201

17 5,007,987

CLASS 204

1.11 5,007,989
15 5,007,990
58.5 5,007,991
59 R 5,007,992
153.18 5,007,988
192.31 5,008,002
228 5,007,993
240 5,007,994
299 R 5,007,995
409 5,007,996

CLASS 206

0.5 5,007,529
45.210 5,007,530
77.1 5,007,531
208 5,007,533
329 5,007,534
366 5,007,535
394 5,007,536
455 5,007,537
523 5,007,538
524 5,007,539
581 5,007,540
611 5,007,541
621.6 5,007,542

CLASS 208

46 5,007,997
59 5,007,998
113 5,007,999
120 5,008,000
143 5,008,001
254 H 5,008,003
321 5,008,004
407 5,008,005

CLASS 209

167 5,008,006

CLASS 210

111 5,008,007
169 5,008,008
193 5,008,009
232 5,008,010
5,008,011
321.8 5,008,012
482 5,008,013
512.1 5,008,014
634 5,008,015
5,008,016
710 5,008,017
717 5,008,018
747 5,008,019
751 5,008,020
5,008,021
755 5,008,022
764 5,008,023

CLASS 212

160 5,007,543
265 5,007,544

CLASS 215

14 5,007,545
32 5,007,546

CLASS 219

10.55 E 5,008,024
5,008,507
5,008,508
10.55 M 5,008,506
69.15 5,008,509
121.48 5,008,511
121.64 5,008,512
121.69 5,008,513
121.7 5,008,510
155 5,008,514
211 5,008,517
212 5,008,515
519 5,008,516

CLASS 220

3 5,007,548
3.8 5,007,549
8 5,007,550
23.4 5,007,551
23.83 5,007,552

90 5,007,553
269 5,007,554
339 5,007,555
476 5,007,547
571 5,007,557

CLASS 221

48 5,007,558

CLASS 222

1 5,007,559
5,007,560
55 5,007,561
145 5,007,563
217 5,007,564
386.5 5,007,556
481 5,007,565

CLASS 223

89 5,007,562

CLASS 224

32 R 5,007,566
42.13 5,007,567
42.45 R 5,007,568
275 5,007,569
321 5,007,570

CLASS 225

106 5,007,571

CLASS 227

7 5,007,572
139 5,007,573

CLASS 228

20 5,007,574
44.3 5,007,575
103 5,007,576
265 5,007,577

CLASS 229

1.5 B 5,007,578
5.5 5,007,579
69 Re.33,570
117.17 5,007,580

CLASS 232

43.2 5,007,581

CLASS 235

379 Re.33,571
383 5,008,518
5,008,519
454 5,008,521
462 5,008,520
483 5,008,552

CLASS 236

40 5,007,582

CLASS 237

66 5,007,583

CLASS 239

88 5,007,584
176 5,007,585
222.17 5,007,586
289 5,007,587
318 5,007,588

CLASS 241

21 5,007,589
25 5,007,590
37.5 5,007,591
169.1 5,007,592
264 5,007,593

CLASS 242

3 5,007,594
46.4 5,007,595
71.800 5,007,596
82 5,007,597
86.2 5,007,598
86.51 5,007,599
194 5,007,600
223 5,007,601
246 5,007,602

CLASS 248

59 5,007,603
62 5,007,604
5,007,605
152 5,007,606
188.9 5,007,607
297.2 5,007,608
303 5,007,609
311.2 5,007,610
422 5,007,611
558 5,007,612

CLASS 250

203.6 5,008,522
214 A 5,008,523
5,008,524
214 C 5,008,525
214 R 5,008,526
216 5,008,527

221 5,008,528
5,008,529
5,008,530
222.1 5,008,531
5,008,532
223 B 5,008,533
229 5,008,534
305 5,008,535
307 5,008,536
309 5,008,537
324 5,008,538
336.1 5,008,539
5,008,540
338.3 5,008,541
341 5,008,542
342 5,008,543
349 5,008,544
358.1 5,008,545
366 5,008,546
368 5,008,547
372 5,008,548
396 ML 5,008,549
453.1 5,008,550
462.1 5,008,551
492.2 5,008,553
504 R Re.33,572
551 5,008,554
560 5,008,555
5,008,556
561 5,008,557
563 5,008,558
575 5,008,559

CLASS 251

58 5,007,613
83 5,007,614
368 5,007,615

CLASS 252

8.51 5,008,025
8.553 5,008,026
68 5,008,028
91 5,008,029
106 5,008,030
168 5,008,031
174.24 5,008,032
182.13 5,008,033
301.40 F 5,008,034
312 5,008,035
313.1 5,008,036
314 5,008,037
363.5 5,008,038
392 5,008,039
500 5,008,040
5,008,041
518 5,008,042
582 5,008,043
628 5,008,044
633 5,008,045

CLASS 254

212 5,007,616
372 5,007,617

CLASS 256

1 5,007,618
34 5,007,619

CLASS 260

410.6 5,008,046
424 5,008,047

CLASS 261

78.2 5,008,048

CLASS 264

4 5,008,049
4.3 5,008,050
30 B1 4,489,022
40.3 5,008,051
40.5 5,008,052
60 5,008,053
63 5,008,054
117 5,008,055
130 5,008,056
134 5,008,057
5,008,058
230 5,008,059
255 5,008,060
257 5,008,061
272.15 5,008,062
297.2 5,008,063
308 5,008,064
328.6 5,008,065
537 5,008,066

CLASS 266

168 5,007,620
220 5,007,621

CLASS 267

158 5,007,622

CLASS 270

39 5,007,623
52 5,007,624
53 5,007,625

CLASS 271

33 5,007,626
35 5,007,627
263 5,007,628
277 5,007,629

CLASS 272

69 5,007,630
70 5,007,631
72 5,007,632
117 5,007,635
123 5,007,633
134 5,007,634

CLASS 273

1.5 R 5,007,637
26 A 5,007,638
60 R 5,007,639
63 A 5,007,640
138 A 5,007,641
148 R 5,007,642
167 R 5,007,643
178 B 5,007,644
181 F 5,007,645
183 E 5,007,646
213 5,007,647
236 5,007,648
237 5,007,649
249 5,007,650
256 5,007,651
326 5,007,652
448 5,007,636

CLASS 280

87.051 5,007,653
166 5,007,654
248 5,007,498
250.1 5,007,655
615 5,007,656
626 5,007,657
661 5,007,658
707 5,007,659
715 5,007,660
735 5,007,661
739 5,007,662

CLASS 283

81 5,007,663

CLASS 285

330 5,007,664
334 5,007,665
373 5,007,666
382.2 5,007,667

CLASS 292

216 5,007,668
262 5,007,669

CLASS 296

39.1 5,007,670
39.2 5,007,671
97.1 5,007,532
100 5,007,672

CLASS 297

159 5,007,673
184 5,007,674
195 5,007,675
218 5,007,676
284 5,007,677
353 5,007,678
374 5,007,679
379 5,007,680
440 5,007,681
452 5,007,682

CLASS 299

10 5,007,683
81 5,007,684
91 5,007,685

CLASS 300

21 5,007,686

CLASS 303

113 5,007,687

CLASS 307

19 5,008,560
80 5,008,561
265 5,008,562
269 5,008,563
271 5,008,564
296.7 5,008,565
296.8 5,008,566
443 5,008,567
451 5,008,568
465 5,008,569
475 5,008,570
529 5,008,571

CLASS 310

45 5,008,572
67 R 5,008,573
68 D 5,008,574
89 5,008,575
166 5,008,576

233 5,008,577
256 5,008,578
303 5,008,579
321 5,008,580
323 5,008,581
332 5,008,582

CLASS 312

7.2 5,007,688

CLASS 313

25 5,008,583
136 5,008,584
231.31 5,008,585
318 5,008,587
5,008,588
456 5,008,589
500 5,008,590
524 5,008,591
623 5,008,592

CLASS 315

39 5,008,593
111.81 5,008,594
178 5,008,595
205 5,008,596
209 R 5,008,597
225 5,008,598
247 5,008,599
290 B1 4,480,214
370 5,008,600

CLASS 318

268 5,008,601
561 5,008,602
568.1 5,008,603
587 5,008,604
630 5,008,605
649 5,008,606
696 5,008,607
729 5,008,608

CLASS 323

313 5,008,609
315 5,008,586

CLASS 324

84 5,008,610
96 5,008,611
117 R 5,008,612
133 5,008,613
158 F 5,008,614
5,008,615
5,008,616
158 R 5,008,617
5,008,618
207.16 5,008,619
213 5,008,620
227 5,008,621
248 5,008,622
262 5,008,623
318 5,008,624
351 5,008,625
414 5,008,626
444 5,008,627
693 5,008,628

CLASS 328

14 5,008,629
165 5,008,630

CLASS 330

51 5,008,631
256 5,008,632
277 5,008,633
306 5,008,634

CLASS 331

1 A 5,008,635
2 5,008,636
8 5,008,637
68 5,008,638

CLASS 333

116 5,008,639
219.1 5,008,640

CLASS 335

80 5,008,641

CLASS 336

96 5,008,643
192 5,008,644

CLASS 337

70 5,008,645

CLASS 338

20 5,008,646

CLASS 340

432 5,008,647
546 5,008,648
572 5,008,649
604 5,008,650
605 5,008,652
620 5,008,653

664 5,008,651
686 5,008,654
691 5,008,655
718 5,008,656
766 5,008,657
784 5,008,658
812 5,008,659
825.06 5,008,662
825.5 5,008,663
825.54 5,008,660
5,008,661
854 5,008,664
870.26 5,008,665
936 5,008,666
984 5,008,667

CLASS 341

83 5,008,668
102 5,008,669
113 5,008,670
136 5,008,671
138 5,008,672
144 5,008,673
150 5,008,674
152 5,008,675
154 5,008,676

CLASS 342

17 5,008,677
158 5,008,678
353 5,008,679
372 5,008,680

CLASS 343

700 MS 5,008,681
713 5,008,682

CLASS 346

1.1 5,008,683
76 PH 5,008,684
108 5,008,685
5,008,686
135.1 5,008,687
140 R 5,008,688
5,008,689
5,008,690
157 5,008,691

CLASS 350

1.6 5,007,689
3.68 5,007,690
6.7 5,007,691
6.8 5,007,692
76.34 5,007,706
96.13 5,007,693
96.14 5,007,694
5,007,695
5,007,696
96.15 5,007,697
5,007,698
96.16 5,007,699
96.17 5,007,700
96.20 5,007,701
5,007,702
96.21 5,007,704
96.23 5,007,703
96.29 5,007,705
118 5,007,707
162.2 5,007,708
162.22 5,007,709
166 5,007,710
174 5,007,711
255 5,007,712
286 5,007,713
334 5,007,715
336 5,007,716
353 5,007,714
5,007,717
357 5,007,718
382 5,007,722
425 5,007,719
463 5,007,720
486 5,007,721
508 5,007,723
604 5,007,724
633 5,007,725

CLASS 351

41 5,007,726
47 5,007,727
118 5,007,728
219 5,007,729
243 5,007,730

CLASS 354

173.1 5,008,692
214 5,008,693
277 5,008,694
403 5,008,695
408 5,008,696
413 5,008,697
429 5,008,698
457 5,008,699

CLASS 355

27 5,008,700
35 5,008,701
43 5,008,705
52 5,008,702
53 5,008,703
202 5,008,704
5,008,710
206 5,008,711
5,008,712
219 5,008,706
220 5,008,707
259 5,008,708
309 5,008,709
313 5,008,714
5,008,715
319 5,008,713
322 5,008,716

CLASS 356

28.5 5,007,731
70 5,007,733
73 5,007,732
124 5,007,734
128 5,007,735
152 5,007,736
336 5,007,737
347 5,007,738
383 5,007,739
436 5,007,740
448 5,007,741

CLASS 357

16 5,008,717
17 5,008,718
22 5,008,719
23.13 5,008,724
23.4 5,008,720
5,008,725
23.5 5,008,721
5,008,722
23.6 5,008,738
23.7 5,008,723
30 5,008,726
40 5,008,727
45 5,008,728
51 5,008,729
68 5,008,730
71 5,008,731
5,008,732
72 5,008,733
74 5,008,734
5,008,735
75 5,008,736
81 5,008,737

CLASS 358

21 R 5,008,739
23 5,008,740
32 5,008,741
79 5,008,742
101 5,008,743
105 5,008,744
5,008,745
133 5,008,746
136 5,008,747
5,008,748
147 5,008,749
5,008,750
148 5,008,751
160 5,008,752
171 5,008,753
183 5,008,754
5,008,755
210 5,008,756
213.13 5,008,757
213.16 5,008,758
335 5,008,759
451 5,008,760

CLASS 360

45 5,008,761
61 5,008,762
70 5,008,763
77.12 5,008,765
77.15 5,008,764
96.5 5,008,766
103 5,008,767
104 5,008,768
130.24 5,008,769
185 5,008,856

CLASS 361

56 5,008,770
103 5,008,771
119 5,008,772
187 5,008,773
283 5,008,774
383 5,008,775
392 5,008,776
412 5,008,777
415 5,008,778
5,008,779

CLASS 362

34 5,008,780
61 5,008,781
72 5,008,782
83.2 5,008,783
116 5,008,784
183 5,008,785
220 5,008,790
221 5,008,787
231 5,008,788
255 5,008,789
290 5,008,791
374 5,008,792
413 5,008,793

CLASS 363

20 5,008,795
21 5,008,794
5,008,796
43 5,008,797
59 5,008,798
60 5,008,799
61 5,008,800
132 5,008,801

CLASS 364

140 5,008,802
148 5,008,803
167.01 5,008,804
184 5,008,805
191 5,008,806
200 5,008,786
5,008,807
5,008,808
5,008,809
5,008,810
5,008,811
5,008,812
5,008,813
5,008,814
5,008,815
5,008,816
5,008,817
5,008,818
5,008,819
5,008,820
413.01 5,008,821
413.21 5,008,822
424.03 5,008,823
431.05 5,008,824
434 5,008,825
463 5,008,826
464.02 5,008,827
474.28 5,008,828
480 5,008,829
490 5,008,830
496 5,008,831
513 5,008,832
5,008,833
5,008,834
513.5 5,008,835
516 5,008,836
519 5,008,837
522 5,008,838
550 5,008,839
5,008,840
551.01 5,008,841
5,008,842
571.02 5,008,843
571.05 5,008,844
576 5,008,845
707 5,008,846
709.16 5,008,847
725 5,008,848
746 5,008,849
760 5,008,850
807 5,008,851
900 5,008,852
5,008,853
5,008,854

CLASS 365

96 5,008,855
200 5,008,857
233.5 5,008,858

CLASS 367

2 5,008,859
6 5,008,860
59 5,008,861
105 5,008,862
165 5,008,863

CLASS 368

10 5,008,864
5,008,865
21 5,008,866
23 5,008,867
88 5,008,868
228 5,008,869
242 5,008,870

CLASS 369

28 5,008,871
32 5,008,872
44.14 5,008,873
75.2 5,008,874
85 5,008,875
244 5,008,876

CLASS 370

4 5,008,877
60 5,008,878
85.150 5,008,881
85.2 5,008,879
85.6 5,008,880
94.3 5,008,882
95.1 5,008,883
110.1 5,008,884

CLASS 371

3 5,008,885
40.2 5,008,886

CLASS 372

6 5,008,887
29 5,008,888
32 5,008,889
38 5,008,894
41 5,008,890
45 5,008,891
5,008,892
50 5,008,893
69 5,008,895
83 5,008,896

CLASS 373

11 5,008,897

CLASS 374

136 5,007,742
141 5,007,743

CLASS 375

1 5,008,898
5,008,899
8 5,008,900
5,008,901
10 5,008,902
60 5,008,903
107 5,008,904

CLASS 376

159 5,008,067
230 5,008,068
299 5,008,069
419 5,008,070

CLASS 377

77 5,008,905

CLASS 378

54 5,008,906
65 5,008,907
70 5,008,908
71 5,008,909
84 5,008,910
86 5,008,911
91 5,008,912
105 5,008,913
108 5,008,914
5,008,915
118 5,008,916
140 5,008,917
144 5,008,918
173 5,008,919
185 5,008,920
198 5,008,921
208 5,008,922

CLASS 379

3 5,008,923
53 5,008,924
60 5,008,925
89 5,008,926
98 5,008,927
100 5,008,928
112 5,008,929
210 5,008,930
399 5,008,931
449 5,008,932
452 5,008,933

CLASS 380

15 5,008,934
29 5,008,935
50 5,008,936
5,008,937
5,008,938

CLASS 381

15 5,008,939
31 5,008,940
43 5,008,941
51 5,008,942
68.6 5,008,943
86 5,008,944
194 5,008,945

CLASS 382

2 5,008,946
6 5,008,947
13 5,008,948
41 5,008,949
50 5,008,950
56 5,008,951

CLASS 383

37 5,007,744

CLASS 384

307 5,007,745
420 5,007,746
450 5,007,747

CLASS 400

103 5,007,748
208 5,007,749
249 5,007,750
322 5,007,751
636 5,007,752

CLASS 401

139 5,007,753
174 5,007,754
175 5,007,755
195 5,007,756
278 5,007,757

CLASS 402

75 5,007,758

CLASS 403

13 5,007,759
5,007,760
287 5,007,761
341 5,007,762

CLASS 404

6 5,007,763
70 5,007,764
74 5,007,765

CLASS 405

24 5,007,766
154 5,007,767
5,007,768
195 5,007,769
240 5,007,770
258 5,007,771

CLASS 406

39 5,007,772

CLASS 407

27 5,007,773
94 5,007,774
113 5,007,775

CLASS 408

6 5,007,776
67 5,007,777
125 5,007,778

CLASS 411

48 5,007,779
82 5,007,780
337 5,007,781

CLASS 412

40 5,007,782

CLASS 414

222 5,007,783
225 5,007,784
331 5,007,785
408 B1 4,773,812
409 5,007,786
412 5,007,787
417 5,007,788
427 5,007,789
494 5,007,791
500 5,007,792
502 5,007,793
542 5,007,794
737 5,007,795
751 5,007,796
790.8 5,007,797

CLASS 415

88 5,007,798

CLASS 416

104 5,007,799
220.00 R 5,007,800
223 R 5,007,801

CLASS 417

137 5,007,803
209 5,007,804
216 5,007,805
360 5,007,806
363 5,007,807
368 5,007,808
371 5,007,809
410 5,007,810
534 5,007,812

CLASS 418

63 5,007,813

CLASS 419

28 5,008,071

CLASS 420

69 5,008,072
121 5,008,073
578 5,008,074

CLASS 422

6 5,008,075
28 5,008,076
5,008,079
56 5,008,077
5,008,078
5,008,080
64 5,008,081
65 5,008,082
101 5,008,083
102 5,008,084
109 5,008,085
180 5,008,086
186.22 5,008,087
234 5,008,088

CLASS 423

121 5,008,089
212 5,008,090
245.1 5,008,091
263 5,008,092
272 5,008,093
328 5,008,094
467 5,008,095
477 5,008,096
493 5,008,097
659 5,008,098

CLASS 424

1.1 5,008,099
59 5,008,100
5,008,101
5,008,102
66 5,008,103
70 5,008,104
5,008,105
80 5,008,106
84 5,008,107
401 5,008,108
422 5,008,109
448 5,008,110
449 5,008,111
451 5,007,790
468 5,008,112
480 5,008,113
484 5,008,114
486 5,008,115
491 5,008,116
494 5,008,117
498 5,008,118
639 5,008,119

CLASS 425

3 5,007,814
117 5,007,815
135 5,007,816
136 5,007,817
144 5,007,818
184 5,007,819
333 5,007,820
548 5,007,821
575 5,007,822

CLASS 426

74 5,008,120
89 5,008,121
417 5,008,122
509 5,008,123
589 5,008,124
594 5,008,125
611 5,008,126

CLASS 427

36 5,008,127
130 5,008,128
160 5,008,129
206 5,008,130
209 5,008,131
217 5,008,132
333 5,008,133
386 5,008,134
5,008,135
388.1 5,008,136

CLASS 428

35.4 5,008,137
36.4 5,008,138
40 5,008,139
179 5,008,140
182 5,008,141
203 5,008,142
207 5,008,143
211 5,008,144
288 5,008,145
323 5,008,147
328 5,008,146
336 5,008,148
5,008,149
340 5,008,150
343 5,008,151
423.1 5,008,152
429 5,008,153
447 5,008,154
463 5,008,155
506 5,008,156
612 5,008,157
614 5,008,158
5,008,159
656 5,008,160

786 5,007,437

CLASS 429

7 5,008,161
34 5,008,162
40 5,008,163
59 5,008,164
94 5,008,165

CLASS 430

7 5,008,166
56 5,008,167
5,008,168
59 5,008,169
65 5,008,170
67 5,008,171
5,008,172
78 5,008,173
143 5,008,174
155 5,008,175
272 5,008,176
522 5,008,177
527 5,008,178
546 5,008,179
552 5,008,180
572 5,008,181

CLASS 432

14 5,007,823
20 5,007,824
99 5,007,825
121 5,007,826

CLASS 433

4 5,007,827
18 5,007,828
61 5,007,829
68 5,007,830
114 5,007,831
126 5,007,832
172 5,007,833
173 5,007,834
174 5,007,835
181 5,007,836
226 5,007,837

CLASS 434

178 5,007,838
206 5,007,840

CLASS 435

5 5,008,182
5,008,183
7.23 5,008,184
5,008,185
7.36 5,008,186
72 5,008,187
88 5,008,188
105 5,008,189
108 5,008,190
124 5,008,191
128 5,008,192
138 5,008,193
172.3 5,008,194
193 5,008,195
240.2 5,008,196
240.24 5,008,197
240.27 5,008,198
5,008,199
240.49 5,008,200

CLASS 436

10 5,008,201
18 5,008,202
55 5,008,203
85 5,008,204
89 5,008,205

CLASS 437

3 5,008,206
31 5,008,207
5,008,208
5,008,209
33 5,008,210
40 5,008,211
43 5,008,212
51 5,008,213
52 5,008,214
83 5,008,215
192 5,008,216
195 5,008,217
201 5,008,218

CLASS 439

66 5,007,841
5,007,842
5,007,843
68 5,007,844
73 5,007,845
79 5,007,846
100 5,007,847
101 5,007,848
165 5,007,849
182 5,007,850
188 5,007,851
189 5,007,888
191 5,007,839
201 5,007,852
211 5,007,853
367 5,007,854
411 5,007,855
452 5,007,856
490 5,007,857
498 5,007,858
500 5,007,859
540 5,007,860
578 5,007,861
607 5,007,862
639 5,007,863
651 5,007,864
839 5,007,865

CLASS 440

61 5,007,866
71 5,007,867
5,007,869
89 5,007,870
071 5,007,868

CLASS 441

65 5,007,871

CLASS 445

25 5,007,872
49 5,007,873
50 5,007,874

CLASS 446

66 5,007,875
168 5,007,876
242 5,007,877

CLASS 452

198 5,007,878
5,007,879

CLASS 455

12 5,008,952
33 5,008,953
79 5,008,954
181 5,008,955
318 5,008,956
618 5,008,957
619 5,008,958

CLASS 464

159 5,007,880
171 5,007,881

CLASS 474

84 5,007,882
242 5,007,883
5,007,884

CLASS 475

231 5,007,885
5,007,886

CLASS 493

151 Re.33,573
316 5,007,889
434 5,007,890
444 5,007,891

CLASS 494

17 5,007,892

CLASS 501

12 5,008,219
81 5,008,220
103 5,008,221
134 5,008,222

CLASS 502

63 5,008,224
73 5,008,225
81 5,008,226
83 5,008,227
111 5,008,228
167 5,008,229
170 5,008,230
231 5,008,233
326 5,008,234
342 5,008,235

CLASS 503

207 5,008,231
209 5,008,236
212 5,008,237
217 5,008,238
227 5,008,232
5,008,239

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2 5,008,240
3 5,008,241
8 5,008,242
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12 5,008,244
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57 5,008,254
155 5,008,255
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220 5,008,263
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277 5,008,269
292 5,008,271
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468 5,008,286
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544 5,008,290
578 5,008,291
654 5,008,292
718 5,008,293
731 5,008,294
766 5,008,295

CLASS 521

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136 5,008,297
139 5,008,298
159 5,008,299

CLASS 522

8 5,008,300
13 5,008,301
14 5,008,302
64 5,008,303

CLASS 523

118 5,008,304
212 5,008,305
220 5,008,306
5,008,307
406 5,008,308
442 5,008,309

CLASS 524

13 5,008,310
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92 5,008,312
120 5,008,313
143 5,008,314
180 5,008,315
230 5,008,316
262 5,008,317
284 5,008,318
321 5,008,319
361 5,008,320
378 5,008,321
398 5,008,322
469 5,008,323
504 5,008,324
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544 5,008,327
759 5,008,328
798 5,008,329

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67 5,008,330
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433 5,008,347
474 5,008,348
477 5,008,349
507 5,008,350
528 5,008,351
534 5,008,352

CLASS 526

230.5 5,008,353
246 5,008,354
271 5,008,355
281 5,008,356
292.2 5,008,357
292.3 5,008,358

CLASS 527

103 5,008,359

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230 5,008,365
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351 5,008,374
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119 5,008,387

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243 5,008,391
250 5,008,392
261 5,008,393

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213 5,008,395
263.8 5,008,396
331 5,008,397
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452 5,008,400
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561 5,008,403

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315 5,008,405
378 5,008,406
383 5,008,407
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497 5,008,410
519 5,008,411
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534 5,008,413
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436 5,008,432

CLASS 560

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26 5,008,436
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61 5,008,439
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355 5,008,447

CLASS 562

429 5,008,448
478 5,008,449
485 5,008,450
891 5,008,451

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256 5,008,452
271 5,008,453
294 5,008,454
300 5,008,455
322 5,008,456

CLASS 568

12 5,008,457
28 5,008,458
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322 5,008,461
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656 5,008,464
697 5,008,465
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727 5,008,470
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208 5,008,477

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11 5,008,460
16 5,008,478
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323 5,008,480
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437 5,008,482

CLASS 600

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22 5,007,896
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74 5,007,899
106 5,007,900
110 5,007,901
117 5,007,902
195 5,007,903
228 5,007,904
295 5,007,905
385.1 5,007,906

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65 5,007,910
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234 5,007,924

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18 5,007,932
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23 5,007,931
5,007,936
34 5,007,937
55 5,007,938
66 5,007,939
5,007,940

D2—	184	316,172		469	316,197		317	316,222		162	316,247		42	316,272	D24—	8	316,297
	247	316,173		479	316,198		384	316,223			316,248		75	316,273		17	316,298
	314	316,174		516	316,199		403	316,224		167	316,249		85	316,274	D25—	119	316,299
	320	316,175		518	316,200		404	316,225		170	316,250		91	316,275	D26—	4	316,300
	641	316,176			316,201		415	316,226		182	316,251	D20—	3	316,276		24	316,301
D3—	32	316,177		596	316,202			316,227	D14—	106	316,252		31	316,277		46	316,302
	35	316,178		601	316,203	D10—	30	316,228		114	316,253		39	316,278		63	316,303
		316,179			316,204			316,229		118	316,254	D21—	2	316,279			316,304
		316,180	D7—	305	316,205		106	316,231			316,255		67	316,280			316,305
		316,181		317	316,206		114	316,230		121	316,256		71	316,281		85	316,306
	37	316,182		384	316,207	D11—	126	316,232			316,257		108	316,282		101	316,307
	40	316,183		398	316,208		241	316,233			316,258		121	316,283		110	316,308
	100	316,184		533	316,209	D12—	11	316,234			316,259		141	316,284		118	316,309
	105	316,185		545	316,210		114	316,235		126	316,260		190	316,285		131	316,310
		316,186		588	316,211		116	316,236		138	316,261		208	316,286		140	316,311
	106	316,187		665	316,212		117	316,237		141	316,262		224	316,287	D28—	7	316,312
D6—	300	316,188		696	316,213		133	316,238		165	316,263		253	316,288		64	316,313
	301	316,189	D8—	14	316,214		145	316,239		245	316,264	D22—	127	316,289	D30—	152	316,314
	335	316,190		30	316,215		146	316,240	D15—	17	316,265	D23—	209	316,290		162	316,315
	366	316,191		61	316,216		168	316,244		28	316,266		242	316,291	D32—	18	316,316
		316,192		66	316,220		169	316,241	D18—	7	316,267		249	316,292		32	316,317
	413	316,193		319	316,217		191	316,242		42	316,268		250	316,293		42	316,318
	440	316,194			316,218		217	316,243	D19—	26	316,269			316,294	D34—	38	316,319
	461	316,195		373	316,219	D13—	133	316,245		35	316,270		287	316,295		42	316,320
	465	316,196	D9—	302	316,221			316,246		41	316,271		335	316,296	D99—	33	316,321

CLASSIFICATION OF PLANTS

P.—	8	7,496		30	7,497		54	7,498		68	7,499		74	7,500		88	7,501

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PATENTS

01 : 5,007,173	5,007,465	5,007,989	5,008,650	5,008,124	5,007,909
5,007,236	5,007,518	5,007,992	5,008,664	5,008,254	5,008,039
5,007,348	5,007,531	5,007,997	5,008,678	5,008,283	5,008,111
5,007,431	5,007,562	5,008,008	5,008,689	5,008,299	5,008,257
5,008,037	5,007,574	5,008,009	5,008,718	5,008,381	5,008,551
5,008,265	5,007,576	5,008,023	5,008,725	5,008,384	5,008,611
5,008,270	5,007,578	5,008,041	5,008,730	5,008,443	5,008,719
04 : 5,007,140	5,007,603	5,008,045	5,008,734	5,008,499	5,008,808
5,007,192	5,007,606	5,008,048	5,008,768	5,008,520	5,008,820
5,007,218	5,007,614	5,008,061	5,008,785	5,008,625	5,008,829
5,007,347	5,007,633	5,008,062	5,008,787	5,008,634	5,008,844
5,007,429	5,007,635	5,008,064	5,008,794	5,008,774	5,008,870
5,007,445	5,007,642	5,008,081	5,008,798	5,008,788	5,008,903
5,007,647	5,007,646	5,008,091	5,008,799	5,008,827	5,008,952
5,007,658	5,007,649	5,008,099	5,008,804	5,008,835	13 : 5,007,221
5,007,666	5,007,663	5,008,102	5,008,814	5,008,871	5,007,249
5,007,699	5,007,669	5,008,109	5,008,833	5,008,931	5,007,273
5,007,702	5,007,675	5,008,129	5,008,838	10 : 5,007,363	5,007,373
5,007,737	5,007,690	5,008,156	5,008,850	5,007,474	5,007,410
5,007,786	5,007,695	5,008,161	5,008,853	5,007,475	5,007,565
5,007,829	5,007,696	5,008,182	5,008,855	5,007,476	5,007,580
5,007,856	5,007,700	5,008,193	5,008,859	5,007,632	5,007,708
5,007,858	5,007,704	5,008,198	5,008,866	5,008,296	5,007,768
5,007,869	5,007,706	5,008,202	5,008,877	5,008,322	5,008,220
5,007,873	5,007,707	5,008,210	5,008,882	5,008,360	15 : 5,007,197
5,008,011	5,007,723	5,008,212	5,008,887	5,008,393	5,007,449
5,008,107	5,007,727	5,008,216	5,008,889	5,008,457	5,007,875
5,008,615	5,007,728	5,008,240	5,008,890	5,008,475	16 : 5,007,420
5,008,635	5,007,762	5,008,251	5,008,897	5,008,476	5,007,568
5,008,736	5,007,770	5,008,325	5,008,900	11 : 5,007,110	5,007,953
5,008,836	5,007,781	5,008,326	5,008,905	5,008,908	17 : 5,007,166
5,008,944	5,007,782	5,008,339	5,008,907	12 : 5,007,109	5,007,178
05 : 5,007,880	5,007,784	5,008,340	08 : 5,007,115	5,007,135	5,007,224
06 : 5,007,141	5,007,789	5,008,422	5,007,174	5,007,139	5,007,229
5,007,196	5,007,790	5,008,433	5,007,185	5,007,167	5,007,245
5,007,227	5,007,828	5,008,448	5,007,191	5,007,195	5,007,250
5,007,260	5,007,841	5,008,451	5,007,488	5,007,198	5,007,257
5,007,265	5,007,843	5,008,468	5,007,616	5,007,200	5,007,272
5,007,274	5,007,846	5,008,492	5,007,812	5,007,259	5,007,324
5,007,289	5,007,864	5,008,510	5,007,844	5,007,275	5,007,353
5,007,293	5,007,872	5,008,546	5,008,019	5,007,280	5,007,393
5,007,312	5,007,876	5,008,548	5,008,085	5,007,319	5,007,473
5,007,328	5,007,879	5,008,555	5,008,294	5,007,346	5,007,512
5,007,335	5,007,897	5,008,568	5,008,672	5,007,377	5,007,530
5,007,367	5,007,898	5,008,574	5,008,919	5,007,414	5,007,533
5,007,387	5,007,901	5,008,602	09 : 5,007,169	5,007,466	5,007,542
5,007,409	5,007,920	5,008,610	5,007,370	5,007,478	5,007,545
5,007,422	5,007,924	5,008,628	5,007,371	5,007,592	5,007,555
5,007,434	5,007,929	5,008,631	5,007,454	5,007,634	5,007,571
5,007,442	5,007,934	5,008,633	5,007,460	5,007,778	5,007,639
5,007,448	5,007,936	5,008,637	5,007,651	5,007,793	5,007,654
5,007,450	5,007,983	5,008,647	5,007,705	5,007,794	5,007,759
5,007,452	5,007,987	5,008,648	5,007,847	5,007,893	5,007,805

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53 : Re.33,572	5,007,871	5,008,845	5,008,336	5,007,417	5,007,814
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5,007,376					

DESIGN PATENTS

01 : 316,237	316,280	316,244	24 : 316,177	36 : 316,213	316,317
02 : 316,172	316,291	316,267	316,216	316,225	47 : 316,191
06 : 316,184	316,292	316,282	316,264	316,231	316,220
316,185	316,308	316,283	25 : 316,204	316,245	48 : 316,175
316,186	08 : 316,243	316,298	316,232	316,309	316,183
316,187	316,288	316,307	26 : 316,275	316,312	316,265
316,194	09 : 316,207	316,315	316,301	37 : 316,188	316,286
316,195	316,306	316,319	316,321	39 : 316,234	316,314
316,201	316,310	18 : 316,182	27 : 316,235	316,238	49 : 316,176
316,202	12 : 316,219	316,199	316,270	316,281	316,214
316,227	316,230	316,260	28 : 316,192	316,287	51 : 316,180
316,241	316,311	316,289	33 : 316,215	40 : 316,266	316,189
316,251	13 : 316,173	20 : 316,299	34 : 316,217	41 : 316,174	316,233
316,252	316,205	21 : 316,285	316,218	42 : 316,212	316,279
316,269	15 : 316,290	316,302	316,221	316,278	55 : 316,209
316,277	17 : 316,197	22 : 316,300	316,248		

PLANT PATENTS

06 : 7,496	7,497	7,498	7,500	12 : 7,501

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